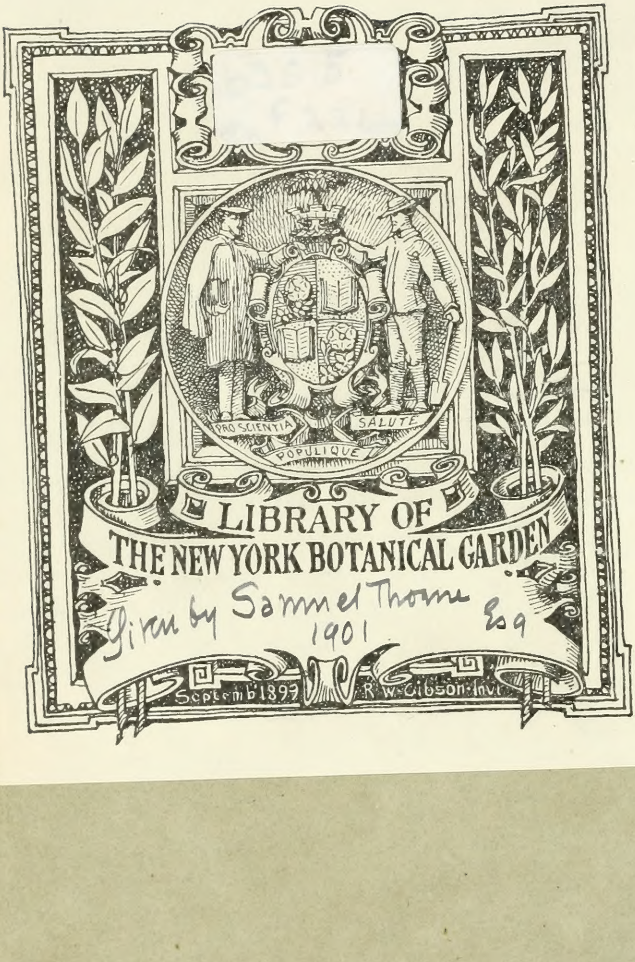

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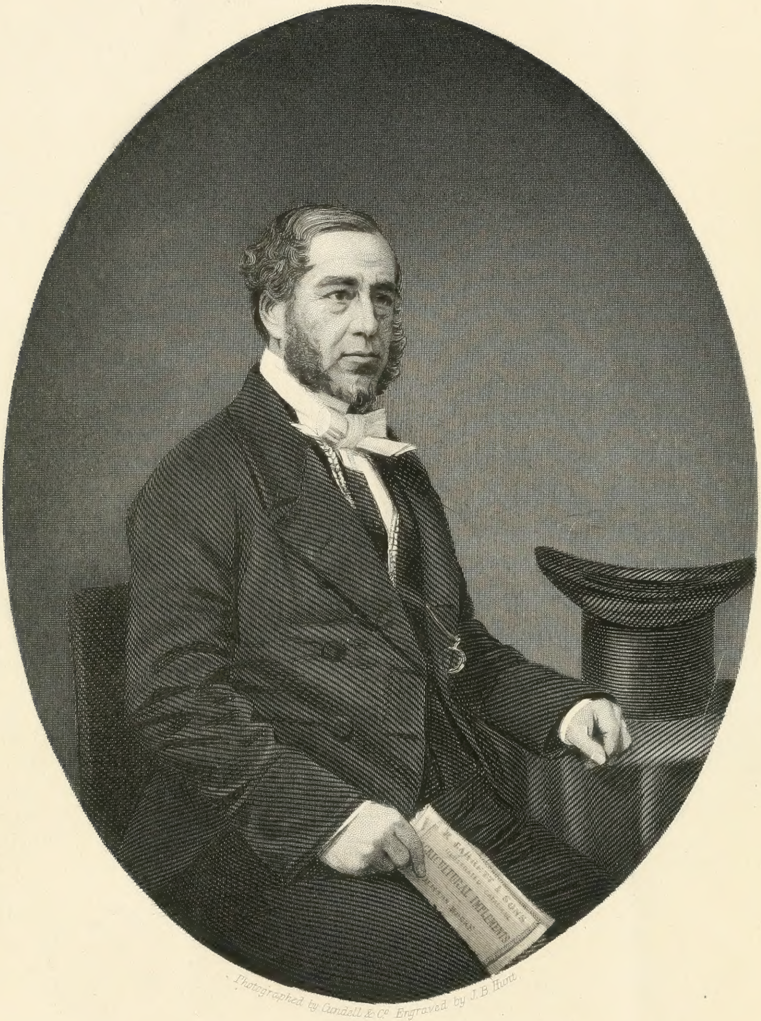

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THE FARMER'S MAGAZINE.

JULY, 1857.

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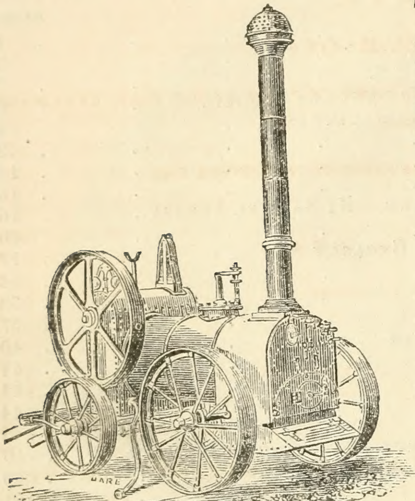

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THE FARMER'S MAGAZINE.

NOVEMBER, 1857.

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THE FARMER'S MAGAZINE.

JULY, 1857.

PLATE I.

PORTRAIT OF MR. RICHARD GARRETT.

PLATE II.

TWO LABOURERS' COTTAGES.

MR. RICHARD GARRETT

(THE HEAD OF THE FIRM OF GARRETT AND SONS).

There is not a more copious source of instruction than biography; more especially as it is calculated to influence the conduct of those just entering upon the active duties of life. It is by having brought before us those predominant tendencies which have led on to fame and fortune, that we are enabled to pursue with advantage the track of knowledge and improvement. What, it is asked, has this or that one done or attempted to do? Has he lived for good or for evil? Is the world benefited or injured by his achievements? If either of these questions should be put concerning the subject of this notice, we may answer at once with some record of his useful career.

Mr. Garrett is the head of the firm of Messrs. Garrett and Sons, of Leiston Works, Saxmundham, Suffolk. He was at a very early age actively connected with the manufacture of agricultural implements. Both his father and grandfather excelled in the production of tools used in husbandry; though till the year 1806 the sickle was the chief instrument of their manufacture. At this period, Mr. Garrett's father, then in but a humble way of business, was engaged in making a thrashing-machine, patented by Mr. John Ball of Hetheringsett near Norwich—the first of its kind that was usefully applied to thrashing purposes in this country. This was considered a serious undertaking for one in Mr. Garrett's position; but, as the speculation succeeded beyond the most sanguine expectations of the patentee, it brought both him and the manufacturer into great repute amongst the agriculturists of the eastern counties of England. In fact, this thrashing machine, though introduced through much opposition and clamour, laid the foundation of the large manufactory of agricultural implements at Leiston; for very shortly after this, several other machines were devised and successfully brought out.

The position of Mr. Garrett even at this time was an important one. So good a financier was he, that soon after he had entered his teens he commenced his career of usefulness in this department of his father's establishment. He was even then remarkable for the vigorous grasp with which he seized on his duties, and the fervid and masculine energy with which he carried them out. Attending to business with great assiduity and integrity, he left the usual pastimes of boyhood to gayer dispositions, and speedily became one of those whose solid and superior views render them fit, at a very early age, for the business of real life. There is, too often, an inaptness for work in men whose early days have been spent lazily; and a generally admitted difficulty in teaching such what a boy would learn with ease. Richard Garrett appears to have thoroughly appreciated such a wholesome fact. Both as a boy and a young man, his greatest delight consisted in strictly attending to whatever he undertook—a disposition which has "grown with his growth, and strengthened with his strength."

The one great event of life which perhaps has more influence on character than many like to acknowledge took place in 1828, when the subject of this notice was united to the woman of his choice. Domestic felicity was now associated with increasing success in business; and all went on prosperously and happily, till his father relinquished business in the spring of 1836; his death taking place the year following. The indefatigable son now found himself, very suddenly and unexpectedly, with the whole weight of a large business upon his own shoulders, and in circumstances which would have been very embarrassing had he not been held in the highest estimation by his family. However, he was not the man to retreat before difficulties. His relations and friends all appeared to vie with each other in doing what they could at this crisis to relieve his anxieties and cares. We may mention here, as one of those pleasing events not of too common occurrence in families where property is concerned, that on the settlement of his father's affairs, all his family united to present him with a silver service, not simply in token of their affection as relatives, but also in admiration of his conduct as an honourable man of business.

Much of the worldly success that has attended the career of Mr. Garrett may be attributed to his zealous preservation of this character in all his transactions, though, undoubtedly, to conduct a business like that in which he was embarked, required the addition of other qualities. These he has ever exhibited in a cool mathematical calculation, and preparation of the powers required for advancing on the road of improvement; as well as in a promptitude of application,and a most vigorous energy in the execution of any design which he deemed necessary to carry out. With such qualifications, no wonder that the comparatively small business he inherited rapidly extended. At the death of his father, his workmen did not number more than sixty; but such has been the effect of his efforts, combined with the progress of mechanical science as applied to husbandry, that upwards of five hundred men—together with manufacturing appliances requiring five steam-engines, the whole occupying about seven acres of ground —are now in constant employment on the Leiston Works. The chief implements manufactured at these works are improved patent steam-engines, thrashing machines, corn and seed drilling and manuring machines, horse-hoes, corn-winnowing, hay-making, and chaff-cutting machines.

The public recognition of Mr. Garrett's labours include, amongst others, the following marks of distinction:—One hundred and thirty-eight distinct money prizes; twenty-seven gold and silver medals; in addition to the Great Council and gold medals of honour awarded by the Council of the Great Exhibition of all Nations, held in Hyde Park, in 1851; in Ireland the same, in 1853; in Paris the same, in 1855; and in Vienna the same, in 1857; with a great many honourable commendations of the smaller description of implements manufactured at the Leiston Works, and exhibited at various agricultural societies here and abroad.

Beyond the immediate calls of his own business, Mr. Garrett has ever been ready to advance in a national point of view that pursuit with which his name is so closely identified. In the year 1837, in conjunction with a few others, he assisted the late Mr. Shaw in the formation of the Royal Agricultural Society of England—an institution that has proved so valuable a nursery for all improvements connected with the farm. During the most prosperous years of its existence, Mr. Garrett was several times elected and re-elected a member of its Council, and during ten years never failed to devote a portion of his time to its monthly meetings. He was one of the exhibitors of agricultural machinery at the first country meeting of the Society at Oxford; while he has attended similar exhibitions, and obobtained prizes on every occasion, since that period. Mr. Garrett was also one of the two implement makers who exhibited the produce of their manufactories at the Smithfield Club Christmas Cattle Show when it was first held in Baker-street—a practice still continued by his firm.

In 1855 Mr. Garrett, beginning to feel some of the effects of his intense and long application to business, resigned the more active duties of Leiston Works to his two elder sons, Richard and John. Since that period Mr. Garrett has resided principally in London; but though removed from the scene of his former labours, he still assists his sons by his counsel and experience.

Upon recently attaining his fiftieth year, his workmen, spontaneously presented him with a very handsome testimonial in plate, with a suitable inscription. The pleasure he felt on so gratifying an occasion was not acknowledged in the usual formal way; but an affectionate letter was sent to each of the workmen, in token of his reciprocal attachment and respect. Perhaps no master ever more deserved this heartfelt and emphatically honest token of regard from his workmen than did Richard Garrett.

PLATE II.

TWO LABOURERS' COTTAGES,

ON THE ESTATE OF HIS GRACE THE DUKE OF BEDFORD, AT PRIESTLEY, NEAR FLITWICK, BEDS.

The accompanying sketch gives us a pair of such cottages as are now to be found in various parts of Bedfordshire on the farms of his Grace the Duke of Bedford. These are generally in a group of two or three, built near the homestead, for the use of the horsekeeper and other farm-servants. The pair lately built at Priestley contain three bedrooms each, and are similar in style and construction to those erected in the villages on His Grace's home estate. They may be described in general terms as admirably adapted to their purpose, being good labourers' cottages and nothing more.

These cottages are all thoroughly well-drained and ventilated, as well as provided with an abundant supply of hard and soft water. They are built on a concrete foundation 2 ft. 6 in. deep, and 8 in. wider than the footings; these are of common bricks, 1½ brick thick, and 6 in. deep. The walls above are 1 brick thick, built hollow from bricks made 3½ in. square and 9 in. long, worked fair both sides, and lime-whitened inside. This hollow work causes a free circulation to all the timbers, and keeps the cottages dry and warm.

The joists, plates, roofing, floors, &c., are of Baltic timber; the roofs are covered with plain tiles and Staffordshire rolled ridges. The ground floors are all paved with 6 in. Staffordshire squares, and the window quarry lights made of very light cast iron, painted, and dotted to imitate lead lights. All the joiner's work is stained to the appearance of light oak, and varnished.

Each house has a good living room 7 ft. 6 in. high, with a boiler range, a washhouse of the same height, fitted up with dresser and shelves, and a copper and stone sink, with waste pipe and trap complete. The pantry is lighted from the north, ventilated with perforated zinc, and fitted with shelves and meat hooks. There is a closet under the stairs for stores, and hat and cloak rails fixed in suitable places for hanging up coats and clothes. There are three bedrooms 8 ft. 4 in. high, approached from the landing of the staircase, which are entered separately, and in no case do the inmates go through one room to get to another.

The premises at the back of the cottages are 25 ft. from the back door: they include a place for wood and coal, and a closet for each house, fitted up with Doulton's stone-ware glazed pan and stink trap, and connected with tubular 9 in. drains to a manure tank in the back garden, which is cleaned out once a year. There is a receptacle for ashes, and an oven for the use of the two houses. The cottages are spouted all round with cast iron, and the down pipes are connected to water-tight underground drains, leading to an underground tank, all rendered with cement.

There is a well at the back of the buildings for the supply of spring water, with an iron pump and suction complete. The back of the pump is prepared to receive a service pipe from the cistern of the closets, to ensure a supply of water for the closets; this is so arranged that the cistern must be filled before any can be received from the pump.

The yards between the houses and outbuildings are divided by dwarf fences and drying posts. The back premises are approached by roads, and a place is allotted for stacking the faggot wood. The cottages with two bedrooms are let at 1s. 2d. per week, those with three bedrooms at 1s. 4d.

The reader is referred, for any further information on these plans, to the first part of the tenth volume of the "Royal Agricultural Society's Journal." We need only add that experience has put the stamp of useful value on the Woburn cottages, and that they are everywhere spoken of as models for their purpose.

HAYMAKING.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

It is amid the hay-fields of Surrey that I address myself to the consideration of a few of the modern inquiries as to the great hay crop of England. Such notices must be of necessity general in their nature, since the grasses from whence our hay is made widely vary with the soil and the climate of the hay-field.

The nutritive value of the hay made from different grasses is of primary importance. Now, the more watery portion of grass materially varies in amount. Way found that in the state the grass was cut (*Jour. Roy. Agri. Soc.*, vol. xiv. p. 171) the per-centage of water ranged from about 51.85 in the common quaking grass to 82.14 in the Trifolium incarnatum, and 87.58 in the grass of the first cutting of a water meadow. This last was the most watery specimen he examined; even the common vetch contained only 82.90, and the red clover but 81·01 per cent.; and it is noticeable that the water-meadow grass of the *second* cutting only contained 74.58 per cent. of water. This result seems to be in accordance with the practice of the holders of the extensive and very productive Hampshire and Wiltshire water meads, who always feed the first crop, and make hay of the succeeding. It does not, however, render more intelligible the fact that the *second* grass crop of irrigated meads rots the sheep depastured on it, whilst the more watery *first* crop does not induce that disease.

In speaking of the amount of water in the different grasses, the reader must not suppose that by conversion into hay all that water is removed; for however dry grasses may be in appearance, yet still a large proportion of water remains, without indeed they have been subjected to artificial heat—and even when the grass has been dried in a temperature of 212 degs., by exposure to the air it again absorbs about 16 per cent. of water, and this is about the amount of moisture remaining in the best-made hay.

When we examine the albuminous or flesh-forming qualities of the hay-producing grasses, we find their varying composition pretty well in accordance with the popular value assigned to the hay prepared from them. Thus, the sweet-scented vernal grass yielded only 2.05 per cent. of albuminous matter; the Trifolium incarnatum but 2.96. The produce rises to 4.06 per cent. in the cock's-foot grass, to 4.27 in red clover, to 4.32 in sainfoin, and to 4.86 in the meadow cat's-tail.

Of the *heat*-producing substances, such as starch, gum, &c., the proportion present in different grasses varies still more widely. Way found only 0.33 per cent. in the upright brome-grass, 8.45 in red clover, 14.11 in Italian rye-grass, and 22.85 in the meadow cat's-tail; in the water-meadow grass of the *first* crop only 3.98, but in that of the *second* crop 11.17 per cent. The superior warmth-producing properties of the second crop does not therefore seem to give us any assistance in our endeavours to account for its rotting properties.

The earthy matters or ash of the different common pasture-grasses varies considerably in amount. The meadow fox-tail yielded 1.55 per cent., the sweet-scented vernal 1.24, the cock's-foot 1.59, red clover 1.85, and lucerne 3.04. In this ash is contained varying, yet considerable, proportions of phosphoric acid. Thus, 100 parts of the ash of the meadow fox-tail yielded 6.25 per cent. of phosphoric acid, the sweet-scented vernal 10.09, the cock's-foot 8.60, red clover 6.71, and lucerne 5.96. In the ashes of some grasses the amount of silica is very considerable: those of the meadow fox-tail yielded 38.75 per cent. of this earth, the cock's-foot 26.65, and the annual rye-grass 41.79. Lucerne, however, only contained 5.9, and red clover only 0.59 per cent.

If such are the constituents of the grasses from whence our hay is made, it is obvious that the great object of hay-making is to preserve the hay for winter use in the condition the most resembling the grass when in its highest state of perfection. To attain this result it would seem that we have only to guard against the injurious effects of rain and dews, and of too great a degree of fermentation. In the experiments of Dr. T. Thomson and Dr. R. Thomson they determined that 100 parts of hay should be equivalent in its nutritive properties to 387 parts of grass. This amount of grass they concluded should contain of matter soluble in hot water 28.13 parts, and in cold water 8.21 parts; but instead of this amount they reported, "We find that the equivalent quantity of hay, or 100 parts, only contains 16 parts instead of 13 parts soluble in hot water, and 5.06 parts instead of 8.21 parts soluble in cold water." A very large proportion of the soluble matter of the grass obviously, therefore, disappeared in its conversion into hay. The result of the hay-making in this particular instance has therefore been to approximate the soft, juicy, and tender grass to woody fibre, by either washing out or decomposing its sugar and other soluble constituents. These facts enable us to explain why cattle consume a larger amount of hay than is equivalent to the relative amount of grass: thus, animals which can subsist upon 100 lbs. of grass, should be able to retain the same condition by the use of 25 lbs. of hay, if the latter suffered no deterioration in drying. Our experiments, however, show that a cow thriving on 100 lbs. to 120 lbs. of grass required 25 lbs. of hay and 9 lbs. of barley or malt to sustain her in equal condition.

One great cause of the deterioration of hay is the water which may be present, either from the incomplete removal of the natural amount in the grass by drying, or by its absorption from the atmosphere. Water, when existing in hay from either of these sources, will induce fermentation, a process by which one of the most important constituents of the grass—namely, sugar—will be destroyed.

In glancing at the various modes of hay-making practised in different parts of England, we shall notice that in the best hay-making districts the objects which the labours of the chemist have so well illustrated are the most carefully regarded. The best hay-makers are confessedly those in the neighbourhood of London and in the southern counties. As we advance towards the north, less care is bestowed; the moisture of the climate increases—the hay-making season is later—the value of the hay is inferior. Whilst June is the great hay-making month of the south, July is more commonly the season in the midland counties: September is the great hay time in the lake districts.

It will be useful, therefore, if we briefly trace the course pursued by the great hay-makers of the metropolitan district; this was described some little time since by Mr. R. Smith in his prize essay on the Management of Grass Land (*J. R. A. S.*, vol. ix., p. 20.) "The mowers," he tells us, "are there commonly paid by the acre – the hay-makers by the day." In forming a calculation of the required hands, it is found that an average of five boys, women, and men to each mower is a proper proportion, and that if the weather permits, the work progresses in a corresponding ratio. The course of operations followed in fine weather during the first three or four days, or until the time when the hay is fit for carrying, has been given by Mr. Smith so carefully and so practically, that it is needless to abridge its very useful details. He observes, with regard to the work of the—

First day.—That the mowers having commenced in the early part of the morning, the grass mown before 9 o'clock is carefully "tedded" out over every portion of the ground; and if time allow, it is moved again previous to 1 o'clock; after this it is "hacked" into small rows, the hay-makers following each other; when this is accomplished, they return to the early part, and place it in small "grass cocks."

Second day.—The first operation of the morning is the "tedding" of all the grass mown after 9 o'clock the first day, and that mown previously to 9 on the second day; after which the next stage is to shake out the "grass cocks" (made the previous day) into small rows, or in some instances, into round patches; in either case the spare ground is kept raked, and the hay moved once or twice previously to dinner-time, the early process adopted on the first day being also carried on in due succession. After dinner the more forward hay is raked into small double "winrows," then the next stage or portion is advanced as on the first day by "hacking;" after which the hay-makers return to the forward hay, and place it in moderate cocks, again returning to the "hacks," and leaving them as before in small "grass cocks."

Third day.—The process of "tedding" again takes place in the early part of the morning, and every other order, as practised on the two preceding days, follows in proper and due succession; the hay most forward now requires nice attention, and is managed according to the appearance of the weather; if fine and warm, it is again shaken out into round patches, or if a heavy crop, is usually strewed into "winrows," and again moved over previous to dinner or 1 o'clock: after this, arrangements are made for carrying—a period of much anxiety. As every operation to be performed in due succession is now in full practice, and considerable judgment is required to keep all hands going on at a proper and profitable rate, a man of energy will realize the old adage, and "make hay while the sun shines;" should the weather prove cloudy, or otherwise, the principal attention and time is necessary to secure those portions under the later processes or stages.

Fourth day.—Nothing fresh occurs on this or the succeeding days beyond the plans carried out on the third day; in fact, at this stage of the proceedings every movement is in accordance with the appearance of the weather. Care is taken to keep the hay in cock, or near together; the land is well raked, and there should be by no means a preponderance of mowers, for it is very unwise to have more hay down at any one period than can be managed upon the established process. Since the introduction of the hay-maker this implement has partially superseded manual labour, and supplied the place of a considerable number of hands: it expedites the work in a remarkable degree, and at some periods of the hay season is almost invaluable.

The true objects then of hay-making, which the chemist explains by his elaborate examinations, are precisely those which we find the best hay-makers of the South of England have long since sought to obtain. These may be briefly summed up as consisting in the avoidance of the removal of the soluble portions of the grass by moisture; the even removal of the watery portion of the grass by constant turnings, gatherings into windrows, and cocks; and by thus inducing such an even, yet gentle fermentation, as will neither avoid producing, on the one hand, the delightful odour of the best-made meadow hay, or on the other by its excess excite that fulsome richness of scent which is not only alike distasteful to the owner and to his live stock, but is a clear indication that the sugar of the hay has been transformed into other and far less nutritious substances.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A **Weekly Council** was held on Wednesday, the 27th of May. Present: Mr. **Raymond Barker**, V.P., in the Chair; Earl of Powis, Dr. Camps, Mr. Goold, Mr. Neill Malcolm, Mr. Pickin, and Mr. Trench.

The names of 46 candidates were announced for election at the next meeting.

Vienna Meeting.—The Earl of Clarendon favoured the Council with the following communication:

Extracts from a despatch addressed to the Earl of Clarendon by Sir Hamilton Seymour, dated Vienna, May 18, 1857:

"I will only then observe shortly, that among the horses exhibited I did not see one very worthy of that distinction; that of the beasts there were some of great beauty; that among these an animal marked No. 244 in the catalogue, which attracted great attention from the circumstance of its being asserted to be a hybrid (the produce of a stag and a cow), is, I am convinced, nothing more than a bull of a fawn colour, and with thin legs; that I have seen in markets better pigs than any which were exhibited in the 'Augarten;' and that, as I was told, the best sheep were those of the merino breed.

"Of the machinery, the best—naturally—was that exhibited by the English manufacturers, who were very well represented.

"I am told (but I did not see them) that at the exhibition there were some specimens of very excellent writing paper manufactured out of the leaves of the Maize or Indian Corn. I mention this because it occurs to me that the fact may not be known to our English paper manufacturers. As very bad writing paper is made with straw, so very good is to be manufactured from Maize; and the plant, though requiring for its full maturity more sun than it would meet with in England, might, I submit, be worthy of the attention of our agriculturists for the admirable fodder which it supplies, and of our manufacturers for the new purpose to which it is now applied."

Bird-Island Guano.—The Earl of Clarendon also favoured the Council with an extract from the report of Captain Paynter, of H.M.S. Brilliant, on the inferior quality of the guano remaining on the Aves Island.

Horse-Powers.—Mr. Isaac Hartas, of Wrelton, near Pickering, in Yorkshire, favoured the Council with his attendance, for the purpose of submitting to the Members, in full detail, the satisfactory results he had obtained from the experience of 40 different parties in reference to the application of the combined weight and muscular power of horses, exerted on inclined planes, and communicating motion to small machines. The attention of the Council having been called by the Rev. F. G. Holcombe, in December last, to the great convenience of the employment of an economical power to the working of small machinery, and subsequently by Mr. Chadwick and Mr. Whitworth, it was considered desirable to postpone the consideration of Mr. Hartas's details until the 17th of June next, when a fuller attendance of members might be expected than on that occasion (the Derby Day at Epsom).

The following information in the meantime may be considered interesting:—

I. Mr. **Amos's Report.**—Mr. Hartas, of Pickering, exhibited at the Ripon Meeting of the Yorkshire Agricultural Society a single horse-power Thrashing Machine (an American invention), which attracted considerable notice from the novel mode of applying the power. The horse was confined in a narrow gangway, the floor of which was an inclined pathway, consisting of a succession of cross boards, connected by pitch chains working over rollers at each end of the gangway, and forming a travelling floor, which, when put in motion, represented a complete tread-wheel. At first sight, it might appear that a horse would require some training before he would work steadily in such a position; but this is not the case, as any steady horse may be led into the gangway, the floor being made immovable by a break under the command of the feeder of the machine. The horse's head having been secured to a headrail at the end of the gangway, the feeder eases the break, and the travelling-floor being considerably elevated in front, the weight of the horse naturally sets it in motion, and compels the horse to exert himself in a walking action, which is all that is required to drive the thrashing part of the machine. This mode of applying power was certainly attractive for its novelty, whatever may be the advantage to be derived from driving agricultural machinery by it. Mr. Amos, having subjected the machine to experiment, has furnished us with the following interesting report:—

"*Hartas Horse-Power.*—A single horse works, by Isaac Hartas, of Pickering, attracted a great deal of attention. The principle of this machine has been used for some time in America. It consists of a movable platform attached to an endless chain passing over rollers at each end; this endless platform is placed so as to form an inclined plane, upon which the horse walks, and the platform recedes beneath the horse's feet. The platform has cogged 'racks' attached to it, which gear into a toothed wheel, which drives machinery. In this case it drove a small thrashing machine, and had also a small chaff-cutter attached to it. The whole arrangement is very simple. As some discussion took place as to the usual effect, or otherwise, a horse could exert, when working with this machine, some careful experiments were made on the machine in question, and on a well-made horse-works, in which the horse walked round the circle in the usual way. In the first experiment, one of Richmond and Chandler's Oat Crushers or Linseed Mills was attached to the horse-works, with a dynamometer intervening to record the work done. The horse walking at the rate of 2.04 miles per hour, did work equivalent to the raising of 33,110lbs. one foot high per minute. During this experiment, at the rate the horse walked, and taking into consideration the angle of elevation of the platform, the horse would have raised himself to the height of 33.66 feet in one minute—that is had the platform been stationary and prolonged indefinitely. The horse with his harness weighing 1084.5 lbs., and this multiplied by 33.66 feet, the height the horse would have raised himself equals 36,504lbs. lifted one foot high per minute. In the second experiment, the horse walked 1.7 miles per hour, and did work, as shown by the dynamometer, equivalent to raising 31,350 lbs. one foot high per minute, during which time he would have climbed 28.21 feet, which is equivalent to the raising of 30,594 lbs. one foot high per minute. In this experiment the horse walked and worked exceedingly steadily, and the work he did at that time (31,350lbs. lifted one foot per minute) fairly represented the work a horse can do by this machine. To compare the above with a common horse-works, the horse used in the last experiment was yoked with another of similar power and quality, to a two-horse power works, made by Mr. John Barker, of Dunnington. The power was applied to the same mill and dynamometer, and the work done by each horse was equivalent to 26,500 lbs. lifted one foot high per minute, being about 16 per cent. less than the duty done by Mr. Hartas' horse-works. It was apparent to observers that the horses worked equally in all the experiments, and every care the circumstances afforded was taken to obtain the best results. "C. E. Amos."

II. Mr. Joshua East's Report:—

"7, Curzon Street, May Fair, May 21, 1857.

"Having had one of Mr. Hartas' two-horse powers in use for more than a twelvemonth, I have no hesitation in saying that I consider it the best power of the sort I have seen, being easy to control, and as true in its working as steam, and I feel confident more work can be done with two horses with his power than with three with the old-fashioned horse-power; with his no draught being required, the horses working without collars.

"Up to the present time I have not been at the least expense with the exception of the wooden platform, which was of too soft a material; but now having replaced with a harder wood, I do not anticipate anything further will be required, at least for a considerable time.

"30th May,

"Having tried my two-horse power, I find that, with three men to feed and fairly worked, it will cut 24 trusses of hay and 8 trusses of straw in the hour.

(Signed) "JOSHUA EAST."

III. Mr. Yeoman's Report:—

"Guildford Street, Russell Square, May 21, 1857.

"Mr. Hartas' horse-power with the present chaff cutter answers very well; we are cutting nine trusses per hour with one man feeding and attending, and have no doubt that as soon as it is publicly known there will be a great demand for them. The horse seems to perform the work without any apparent fatigue, and at any time I should be happy to show it to any person desiring one. (Signed) "GEO. YEOMANS."

IV. MR. LYSAGHT'S REPORT:—

"Mowbray Lodge, Ripon, May 23, 1857.

"Mr. Hartas' horse-power has been applied to the following purposes: Threshing, chaff-cutting, Oat crushing, and sawing. I have not often timed the quantity of corn threshed, as it usually is only sufficient to supply fresh straw for fodder; however, on one occasion, a stack of black Oats, yielding 12 qrs. 5 bush., was threshed out in 4½ hours, the straw of which was very long, having been grown on fresh land. I have since had a straw shaker and a blast attached to the threshing machine, which, though it saves much manual labour, is estimated to absorb about half the horse power. Five-and-forty minutes has been the average time consumed every other day in cutting straw into half-inch lengths for foddering 30 head of moderate-sized cattle and four horses (during the winter months) for two days; estimated weight thus cut, 8 to 10 cwt. Five-and-twenty minutes are very uniformly occupied in crushing 1 quarter of Oats. A circular saw 18 inches in diameter has been found very useful for cutting fence wood not exceeding 6½ inches in thickness. The advantages I conceive to be the much greater ease to the horse than the ordinary method of applying motive power, the horse's weight in walking on the incline doing the work, without the necessity of any traction; and no driver being required, a saving of manual labour is effected. The general results have given me great satisfaction during two and a-half years' constant use; and I think the machine is well suited to all the purposes of a moderate-sized farm, whether for fixed or moveable barn works.

(Signed) "JAMES LYSAGHT."

The thanks of the meeting were given to Mr. Hartas for the kind trouble he had taken in being present on that occasion, and for his acquiescence in the arrangements then made, that he should again attend the Council at 12 o'clock on Wednesday, the 17th June.

A MONTHLY COUNCIL was held on Wednesday, the 3rd of June. Present: Mr. RAYMOND BARKER, Vice-President, in the Chair; Lord Bridport, Lord Feversham, Sir John Villiers Shelley, Bart., M.P., Sir Watkin Williams Wynn, Bart., M.P., Sir Edward Hulse, Bart., Sir John V. B. Johnstone, Bart., M.P., Mr. Barnett, Mr. Barthropp, Mr. Bramston, M.P., Colonel Challoner, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Wren Hoskyns, Mr. Kinder, Mr. Lawes, Mr. Milward, Mr. Paget, M.P., Mr. Chandos Pole, Mr. Shuttleworth, Professor Simonds, Mr. Simpson, Mr. Thompson, Mr. Vyner, Mr. Jonas Webb, Mr. Burch Western, and Mr. Wilson, of Stowlangtoft.

Fuller Maitland Wilson, Esq., of Langham Hall, Suffolk, was elected a Governor of the Society.

The following new Members were elected:—

Adney, George, Harley, Much-Wenlock, Salop.
Baker, William, Purewell House, Christchurch, Hants.
Baily, Rev. Henry G., The Vicarage, Swindon.
Bennett, William, Regent Street, Cambridge.
Bone, Henry, Avon, Ringwood, Hampshire.
Burleigh, Robert W., Halesworth, Suffolk.
Bury, Charles, Nazing, Essex.
Cockeram, Henry J. J., Ablington, Amesbury.
Crisp, William, Chillesford, Woodbridge, Suffolk.
Crosse, Thomas Bright, Straw Hill, Chorley, Lancashire.
Doggett, Thomas William, Sandon, Royston.
Downes, Samuel, Lancaster-buildings, Liverpool.
Duncombe, Philip P., Brickhill Manse, Bletchley.
Edmunds, Ezekiel, Berryfield House, Bradford, Wilts.
Edwards, Thomas, Wintercott, Leominster, Herefordshire.
Flower, G. F. A., Lewell Farm, Dorchester, Dorset.
Gilbert, Thomas Webb, The Close, Salisbury.
Greene, Edward, Westgate, Bury St. Edmund's.
Hope, Samuel Pierce, Betley Hall, Newcastle, Staffs.
Hopkinson, John, Manton, Worksop, Notts.
Lander, Joseph, Burton, Christchurch, Hampshire.
Lane, John, Barton Farm, Cirencester, Gloucestershire.
Lea, Joseph, Kinderton Hall, Middlewick.
Levison, Ludvig, Great Charles street, Birmingham.
Macgill, Peter, Crabtree Green, Northwick, Cheshire.
Middleton, Henry, Cutteslowe, Oxford.
Newton, R. T., Campsfield, Woodstock, Oxon.
Olrick, L., Danish Legation, London.
Percival, Ralph, Tetton, Middlewick, Cheshire.
Pickert, Ferdinand, 79, Mark-lane, London.
Powell, Evan, Trewythen, Newtown, Montgomeryshire.
Radcliffe, John, Brandsby, York.
Rayer, John, Eastington, Northleach, Glouc.
Risdon, John, Manor Farm, Fitzhead, Taunton.
Robinson, James, Kirkgate, Loweswater, Cumb.
Robinson, Joseph, Lee Green Hall, Middlewich.
Rodwell, J. Kirby, Alton Hall, Woodbridge, Suffolk.
Russell, Robert, Kilwhiss, Ladybank, Fifeshire.
Shepherd, Edward, Bovington Farm, Wool, Wareham.
Slater, Cyrus, Dunkirk, Holmes Chapel, Cheshire.
Slye, William Walter, West-Haddon Lodge, Rugby.
Smith, Edmund James, Whitehall-place, London.
Steadman, James, Lucton, Leominster, Hereford.
Stirling, William, M.P., Keir House, Perthshire.
Squire, Edward Frederick, Eaton-Socon, Bedfordshire.
Sutton, John, Morton Manse, Sandbach, Cheshire.
Swinburne, Thomas Ward, Corndean Hall, Winchcombe.
Taylor, William, Thingehill, Hereford.
Tomlinson, John, Weaver Hall, Winsford, Cheshire.
Walker, Joseph Need, Calderstone, Liverpool.
Warren, Reginald Augustus, Preston-place, Arundel.
Wilson, Professor, The University, Edinburgh.

FINANCES.—Mr. Raymond Barker, as Chairman of the Finance Committee, reported that the current cash-balance in the hands of the bankers was £1,054.

PRESIDENT.—On the motion of Mr. Thompson, seconded by Colonel Challoner, the following resolution was carried unanimously:—

That the President be requested to withdraw the offer of resignation made at the last monthly meeting in consequence of his election to be Speaker of the House of Commons, and that the Secretary do convey to him the cordial thanks of the Council for his exertions to promote the objects and welfare of the Society since the period of his appointment, together with the assurance that his attendance at the Council for the few remaining weeks of his Presidential year, though always welcome, will not be considered indispensable.

PRIZES FOR ESSAYS.—Mr. Thompson, Chairman of the Journal Committee, reported the following additional prizes to be offered for essays and reports sent to the Secretary on or before the 1st of March, 1858 :—

On the Breeding of Cattle, with reference especially to the kind of diet, the treatment, and the condition, best calculated to ensure regular fecundity and successful gestation; and on the causes which act adversely in certain seasons.	£20 0 0
On the comparative advantages of large and small farms; dairy, arable, and grazing	20 0 0
On Manuring Grass-land	20 0 0
On any other agricultural subject....................	10 0 0

Salisbury Meeting.—Colonel Challoner reported the favourable progress of the works for the Salisbury Meeting to be held in the week commencing the 20th of July.

Judges. — Mr. Fisher Hobbs, Chairman of the Judges' Committee, presented the following report:—

The Committee beg to recommend to the Council the following arrangements for the nomination and selection of the Judges of Live Stock and Implements at the Salisbury Meeting : —

1. That a special advertisement be inserted in the usual agricultural papers requesting Members of the Society generally to send to the Secretary, by the 20th June, nominations of such persons to act as Judges in those departments and on that occasion as they can certify from their personal knowledge to be able and willing to act.

2. That a special circular be addressed to each Member of the Council, conveying the same request.

3. That Exhibitors be at liberty to nominate persons for Judges, but to have no voice in the nomination or selection of Judges for the particular classes in which they have made entries for competition.

4. That the general list of these nominations be exhibited in the Secretary's room from the 21st of June until the 1st of July, for any objection to be made in writing and forwarded to the Secretary.

5. That the Council be requested to appoint a committee (excluding from its members all exhibitors) to select from the nomination list the several judges required, and which shall be requested to report its recommendations to the Monthly Council on the 1st of July, when the final appointments will be made.

The Council adopted this report, and appointed a committee agreeably with its recommendation.

Agricultural Inspections.—Mr. Fisher Hobbs called the attention of the Council to the great interest with which the Members at the Exeter Meeting inspected the water-meadows of Sir Thomas Acland, at Killerton, and of Mr. Turner, at Barton; and to the additional interest which would be given to the ensuing country meeting if arrangements could be made for a similar inspection of the modes of irrigation practised in the neighbourhood of Salisbury, as well as of other objects of an agricultural character within a moderate distance of that city. On the motion of Mr. Fisher Hobbs, seconded by Mr. Brandreth Gibbs, the Council agreed to the appointment of a committee, consisting of Lord Portman, Mr. Dyke Acland, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, and Mr. George Turner, to communicate with the Mayor on the subject of the proposed arrangements, and to report their recommendations to the Monthly Council on the 1st July.

Foreign Invitations.—On the motion of Mr. Fisher Hobbs, seconded by Mr. Bramston, M.P., the Secretary was directed to address invitations, on the part of the Council, to the Minister of Agriculture of France and the Agricultural authorities of Vienna, in the hope that the Society might be honoured by their attendance and co-operation at the Salisbury Meeting.

Lectures.—On the motion of Sir John Shelley, Bart., M.P., seconded by Mr. Milward, it was ordered that in consequence of Professor Way not being perfectly recovered from the effects of his recent illness, there should be no lecture delivered on that evening.

On the motion of Colonel Challoner, seconded by Sir John Shelley, Bart., M.P., it was ordered that Professor Simonds' Lecture on Cattle-Murrain should be delivered before the Members of the Society at one o'clock in the afternoon of Wednesday the 17th of June, and that free access be given on that occasion to the Members of the Highland and Agricultural Society of Scotland and the Royal Agricultural Improvement Society of Ireland.

A Weekly Council was held on the 10th of June: present, Mr. Raymond Barker, V.P., in the chair; Earl of Essex, Mr. Raymond Barker (of Fairford), Mr. H. B. Raymond Barker, Mr. Burgess, Mr. Cavendish, Mr. Chadwick, Judge French (of New Hampshire, U.S.), Mr. Glegg, Mr. Goold, Mr. Fisher Hobbs, Mr. Key, Mr. Majendie, Mr. Henry Manning, Mr. Stephen Mills, Mr. Orlebar, Mr. Pain (Mayor of Salisbury), Mr. Parkins, Mr. Pocock, M. Rasch (of Hanover), Mr. Slaney, M.P., Colonel Towneley, Mr. Treherne, Mr. Trimmer, and Mr. Wilson (of Stowlangtoft).

Sewerage-Manure in France.—Mr. Chadwick, C.B., called the attention of the Council to the Trial-works in Paris on the application of sewer-manure, and submitted a communication which, through want of space, we are reluctantly compelled to postpone. The Council expressed to Mr. Chadwick their best thanks for the trouble he had so kindly taken in bringing before them these results of the application of liquid-manure in France.

The Earl of Clarendon transmitted communications on guano-deposits on islands in the Pacific ocean, received from Mr. Thomas Rowlandson, at present residing at San Francisco, with a request that the specimen of the guano forwarded to his Lordship might be analyzed. —Messrs. Burgess and Key stated that a new liquid-manure hose had been introduced to their notice, apparently composed of India-rubber and canvas, and of a much cheaper character than the ordinary hose, the price for the new hose (of two inches internal diameter) being only 1s. 4d. per yard, while the common hose is 3s. They also stated that they had received samples of cotton hose from America, which could be sold at a price one-third less than that now in use, namely, at 1s. 4d. per yard (of two inches internal diameter).—M. Revel communicated a copy of the work detailing his mode of obtaining Truffles.

The Council adjourned to their weekly meeting at twelve o'clock on Wednesday, the 17th instant, when Mr. Hartas and Mr. Chadwick would detail their experience in the employment of horse-powers, and Prof. Simonds, at one o'clock on the same day, would deliver a lecture on the cattle-murrain abroad.

A WEEKLY COUNCIL was held on Wednesday, the 17th of June, present: Colonel CHALLONER, Trustee (in the chair), Lord Berners, Lord Southampton, Lord Walsingham, Lord Feversham, Lord Denman, Hon. A. Leslie Melville, Hon. Judge French (New England), Sir Watkins Williams Wynn, Bart., M.P., Sir Baldwin Leighton, Bart., Sir Montague John Cholmeley, Bart., M.P., Mr. Henry Allen, Mr. Amos, Mr. Appold, Mr. Asplin, Mr. Raymond Barker, Mr. Raymond Barker (of Fairford), Mr. Barnett, Mr. Hodgson Barrow, M.P., Mr. Bastard, Mr. Bligh, Mr. Burgess, Mr. Camps, Rev. Thomas Cator, Mr. Chadwick, Mr. Corbet, Mr. Lewis Cottam, Mr. Dashwood, M. de Trehonnais, Professor Dick (of Edinburgh), Mr. Festing, Mr. Frere, Mr. Elliott Fuller, Mr. Garrett, Mr. Glegg, Mr. Hartas, Mr. Fisher Hobbs, Mr. Horner, Mr. James Howard, Rev. T. C. James, Mr. Kingsmill Key, Mr. Manning, Mr. Miles, M.P., Professor Morton (of the R. V. college), Mr. Chalmers Morton, Mr. Mundy, Mr. Pain (Mayor of Salisbury), Mr. Parkins, Mr. Pocock, Mr. Pope, General Porter, Mr. Scott, Mr. Sidney, Professor Simonds, Mr. Simpson, Mr. Slaney, M.P., Professor Solly, Professor Spooner, Mr. Trench, Mr. Trimmer, Mr. Tunno, Mr. Vyner, Mr. Bullock Webster, Mr. Burch Webster, Mr. Maitland Wilson, Major Wollaston, and Mr. George Wood.

MOTIVE POWER.—The following paper, on an improved mode of applying horse-power to machinery, weight being used as the prime mover, in place of muscular force, was read before the Council by Mr. Isaac Hartas, Wrelton Hall, Yorkshire—

The progress which has been made in the adaptation of machinery to the requirements of agriculture of late years has been so great, that it is difficult to strike at any new suggestions of a practical nature.

We find, however, that the greater part of the machinery for producing power has steam as its prime mover, and is to a considerable extent superseding the use of horses for this purpose. There is no question, where a large amount of work is required to be performed in a short time, or where there is constant employment, steam-power has no superior; but on the other hand, there are a class of farms on which steam is little used, and only at considerable intervals of time, yet we find many of the new machines requiring power are being gradually introduced amongst this class, to whom the use of a more perfect small horse-engine would be of great advantage, in place of manual labour, or the imperfect, or rather ill-adapted, horse-works at present in use.

Nor would the advantage be confined to small holdings alone. It is admitted that food freshly prepared (both chaff and roots) is more palatable and beneficial to animals—science from day to day points out that it is only by right application we can economize labour and increase production.

I submit for examination a more ready and simple mode of using horse-power than the circular wheel now in use. By employing the weight of the animal, in place of his muscular force by traction, it will be seen, in the first place, that command is gained over the full power produced, since his volition ceases, and, secondly, that this power can be transmitted to any machinery, to be acted upon without loss and with great regularity.

The principle of using a moveable weight upon a wheel, or inside a circular trough, is old, and has been applied in various ways. The origin of the machine exhibited is American, where the power is used for cutting wood in the forests to supply railway engines with fuel, for ferrying boats, and a variety of purposes.

The improvements I have made and patented secure an engine of greater simplicity of parts, less liable to derangement, more easily repaired if broken, and of greater power, the friction being reduced to the lowest point. The whole machine is constructed to give the greatest amount of strength with the least weight of material; the friction pulleys are cast in boxes and case-hardened, and the steel rods are made expressly for this machine, requiring great truth in shape and external hardness in texture.

In a short time, after the novelty of the situation has expended itself, no chains or other attachment is required to steady the horse, as he ceases to use his tractile force, and may be put upon the platform without a collar, performing his work perfectly. A heavy yet active horse will exert the most power, for the impetus which the elastic action of the muscles communicate gives a springiness to the motion, which, if in direct communication with a machine, assists materially in overcoming any additional strain; as, for instance, a knotty piece of wood under the circular saw. By this means the action becomes more uniform than where either the communication is indirect, or where a sluggish animal is employed.

The advantage detailed in the foregoing letters show that a large amount of work can be performed with few hands and a small power; and there are many other uses to which this machine can be applied judiciously. By attaching a force-pump, not only can water be supplied to the whole of a farming or domestic establishment, but with a proper hose and nozzle a fire-engine can be in play in a short space of time, capable of acting with great force on either buildings or rick yard; and in placing the machine in farm premises, the proximity of the rickyard should be considered. It will also act well for a liquid-manure pump on many small farms; and even on those of considerable size, where there is no fixed steam-power, the products of the tank could be readily applied, by pumping to a sufficient altitude to ensure a flow to the nearest fields. It has often occurred to me, that a ready mode of using that which we have at command from a gradual accumulation is more desirable, and in the generality of cases would be more profitable, than the manufacture of liquid in quantity sufficient to justify the use of steam.

I may add that several pumps have been erected and are working well; one with two horses at Nafferton, in Yorkshire; at Thilton Hall, near Malton, with two horses; a single horse at the Malton and Pickering Stations of the North Eastern Railway, for supplying their engines with water. These were erected under the superintendence of Wm. and Thos. Hodgson, of Stonegate, York, and with their double action pumps.

The space occupied in the erection is small; and it is, therefore, available where larger horse-works could not be used, and particularly in towns where space is valuable—the stall in a stable being sufficient. In case a shed is purposely built, the dimensions for two horses are 14 feet by 8 in width, and for one horse 14 feet by 6, and 10 feet in height. The shed should be as open as possible, for the purpose of ventilation, and is best built on brick pillars. The expense will, of course, vary much in accordance with the price of the materials used, and the locality, &c., but it may be fairly estimated at from £10 to £12.

	£	s.	d
The price of one-horse engine, delivered at the station of the North Eastern Railway, with thrashing machine complete	30	10	0
Two-horse power ditto, nearly equal to three-horse power by the ordinary mode of working	41	0	0
One-horse for chaff cutting, &c.	18	18	0
Ditto for pumping	21	0	0
Ditto with force-pump attached	35	0	0
Two-horse power machine	27	0	0

Messrs. Burgess and Key, of Newgate-street, have undertaken the agency for London, and have one of these machines at their warehouse for exhibition; it will also be shown by them at the forthcoming show of this society.

Mr. Chadwick, C.B., then favoured the Council with a statement of his information on the same subject, the full details of which we postpone until our next publication.—The Hon. Judge French (of New England), Mr. Amos, and Mr. Slaney, M.P., also expressed their respective opinions.

CATTLE-MURRAIN.—Prof. Simonds delivered a lecture on his recent visit to the Continent, as the inspector of the three national societies of the United Kingdom, for the purpose of ascertaining the nature of the Cattle-Plague or Rinderpest. This lecture occupied 2½ hours in its delivery, and comprised a narrative of Prof. Simonds' journey through the north-west of Europe, until he reached Cracow, where he fell in with animals affected by the disease. He concluded his subject by a statement of the symptoms he had observed in the cattle affected, and the appearance of different parts of the body on *post-mortem* examination. The whole was illustrated by maps and coloured diagrams on a large scale. He was requested by the Council to lose no time in delivering in, for the disposal of the three societies, his complete official report, in order that it might with as little delay as possible be given to the public. The Professor stated that he was intently engaged in drawing up the required document, which he hoped to complete in ten days from that date.

On the motion of Lord Feversham, seconded by Lord Walsingham, the cordial thanks of the Meeting were voted to Prof. Simonds for the interesting and important lecture he had then delivered, and for the lucid manner in which he had pointed out the real nature of the disease, and its total distinctness from pleuro-pneumonia, with which it had been so frequently confounded; as well as their gratification to learn that there was no probability of the cattle-plague reaching this country.—Col. Challoner remarked that he had attended many lectures, but never one of more interest than the one to which they had then listened.

A SPECIAL COUNCIL was held on Friday, the 19th of June. Present: Mr. Miles, M.P., Vice-President, in the Chair; Lord Portman, Lord Berners, Colonel Challoner, and Mr. Pain (Mayor of Salisbury).

Lord Portman, as Chairman of the Expenses' Committee, presented the complete report of the Committee, which was taken into deliberate consideration, and unanimously adopted. The following is an outline of its recommendations:

The committee remark—

1. That the average annual loss on the country meeting during the last five years has been £1,828.

2. That the average annual expense of the "Journal," during the same period, has been £1,602; and the average annual receipts proceeding from its sale to the public £367.

The committee recommend—

1. That arrangements be made with the contractor, by which the expenses of the shedding may be reduced:—

(1.) By contracting the space allowed for bulls to two-thirds of the space hitherto allowed for them.

(2.) By charging the same rate for the shedding required for the exhibition of stock, as charged for implements.

(3.) By doubling the rate of payment made by implement exhibitors for the shedding they require.

(4.) By an early settlement of the contractor's bills, whereby a discount of 5 per cent. will be made by him on the total amount of his charge.

2. That a change be made in the mode of selecting the yardmen, and in the rate at which they have hitherto been paid. At past country meetings they have been paid 7s. a-day each, on the condition of taking their turn at night, if required. The committee recommend that the rate of payment should be reduced to 5s. a-day, allowing 2s. extra to each yardman employed in night work.

3. That the number of judges be reduced from 33 to 20, agreeably with the following arrangement:—

(1.) The judges of implements to be reduced to two in the field and two in the yard, the consulting engineer, in case of difference of opinion, to be called in as umpire, according to the practice hitherto followed in the awards on the steam-engine.

(2.) The judges of stock to consist of two for Shorthorns, two for Herefords, Devons, and other cattle, two for horses, two for short-woolled sheep, two for Hampshire Downs (for the Salisbury meeting especially), two for long-woolled sheep, two for pigs, two for poultry—the stewards of the yard having the power to appoint, in each class, a third judge, to assist in case there should be a difference of opinion.

4. That a more stringent limitation be placed upon the insertion of descriptive matter in the implement catalogue.

5. That the practice of erecting a pavilion for the society's dinner at the country meeting be discontinued.

6. That a steward of admission be appointed to each entrance turnstile of the showyard, for which he shall be responsible, he having, however, the power of appointing any member or members of the society, or a paid agent, should he think necessary, to assist him.

7. That the local bankers at the country meeting be instructed to open an account with the Royal Agricultural Society of England, to the credit of which all moneys received by any officer of the society at the country meeting shall be paid direct; and that all payments at the country meeting shall be made by checks drawn on such bankers, signed by the president and secretary; or, in the absence of the president, by a trustee and the secretary.

8. That fresh arrangements be made in reference to the appointment of metropolitan police at the country meetings of the society.

9. That the amount to be offered for prizes at the country meeting be taken into deliberate consideration, with a view to a proper reduction on a permanent plan.

10. That the showyard at the country meeting be opened on the last day of the show, namely, on Friday, at eight o'clock in the morning, and closed at six; after which time the stock and implements may be removed.

11. That the attention of the House Committee be called to the accumulation of many useless objects sent to the council from time to time as models; and to the great number of books in the Society's library, not of an agricultural character. The committee recommend that all which is not suitable for the purposes of the Society be forthwith disposed of by the House Committee.

JOURNAL.—The Committee are not at present able to suggest any mode of reducing the expenses connected with the "Journal"; but they would advise that the Journal Committee be requested specially to consider whether any improvement tending to diminish the expense can be effected.

GENERAL EXPENDITURE.—The Finance Committee will be able to suggest such proper reductions under the other heads of expenditure, as they may from time to time think expedient; and the Committee advise the Council to place the general expense of the Society on a regular, and, as far as possible, on a permanent system; allowing of no additional order for expense, without very full and extended notice to every member of the Council.

THE CATTLE PESTILENCE.

THE CENTRAL SOCIETY OF AGRICULTURE.

The sitting of the 22nd of April has been wholly occupied with a communication from M. Renault, Director of Alfort, which has exclusively absorbed the attention of all present.

In a previous sitting, M. Pommier had called the attention of the members to a letter published in the *Times*, and which proclaimed in alarming terms the re-appearance of the contagious typhus, which periodically ravages the countries of Northern Europe. And besides this, the measures adopted by the English Government to prevent the introduction into the United Kingdom of cattle, hides, bones, or any animal matter whatever, coming from Russia, Prussia, and Mechlenburg-Schwerin, imparted a character of authenticity to the fears expressed by the *Times*.

M. Renault asks whether these fears are well founded, and if we ought really to trouble ourselves about the reports circulated respecting the contagious typhus.

There was one categorical way of replying, once for all, to these questions; and that was by giving the history of this terrible disease; and M. Renault is better qualified than any other person to afford this information, having been twice sent by the French Government to inspect the district in which the *epizootie* prevailed.

M. Renault first and foremost declares that there is no cause to be alarmed at the ravages of this malady.

Twelve years ago the contagious typhus made a great noise in France; we saw it rapidly approaching towards us: it was reported to be in Belgium, and even in Alsace. The press, the Chamber of Deputies, and the Government were seriously excited about it. A Commission, consisting of Messrs. Yvart (Inspector-General of the Veterinary Schools), Renault (Director of Alfort), and Imlin (Veterinary Surgeon of Strasburg) were sent into the North of Europe.

On arriving at Brussels, the Commission certainly found the country almost appalled; but it was only with the reports which had been spread in France. The Commission took the line of our eastern frontier by following the Rhine, and were met there but by one deep feeling of astonishment, at the fears which we had manifested. On approaching the east the Commission did not perceive the least trace of uneasiness. Wurtemburg and Bavaria, it is true, held themselves upon their guard, but they had not yet adopted any measures of prevention.

It was only at Vienna that the Commissioners could find any traces of the scourge. They learned that the typhus had that time taken its rise in the Russian steppes, where it was still making great ravages enough; that it was during the summer of 1844 that it had introduced itself into Gallicia, and had progressively extended towards the west, with the large droves brought by commerce to the great fairs of Olmutz, from whence it had spread itself, by the dispersion of the animals purchased there, into a great part of Moravia, Lower Austria, and Bohemia. The butchery of the Austrian States, in fact, slaughter annually about 100,000 head of the race from the steppes; and it is by this means that the disease penetrates into the country. But on the arrival of the Commissioners it was rapidly decreasing in Moravia, and quite extinct in Lower Austria; whilst, temporarily stopped in Bohemia, it had re-appeared there afterwards with fresh virulence. These gentlemen repaired thither at once, and were soon able to give an account of the causes of this relapse of the evil.

There is only one remedy employed against the typhus, and that is an absolutely efficacious one. Immediately that the disease is declared in a country, they surround the farm, the commune, or the canton infected, with a cordon of troops, with orders not to allow any of the bovine race to pass out; they then put to death and bury all the sick, and even suspected animals; and at the end of some weeks the disease is stifled.

The typhus had entered Bohemia by Moravia. The veterinary surgeon sent by the Government had prescribed the ordinary means, and the disease had made no further progress, and had almost wholly disappeared. But some surgeons were desirous of making a post-mortem examination of the dead animals; and, from the internal injuries which they observed, they concluded that the disease was no other than abdominal typhus which we find amongst mankind, which originates spontaneously and has no contagious character.

This novel opinion, supported by names of considerable weight in the country, was rapidly disseminated. The faculty of Prague embraced this opinion, which favoured the possibility of the spontaneous rise of the typhus independent of the steppes, entertained by the French authors also who had written upon that disease; and the proprietors, who always saw with regret the massacre of their cattle ordered by the veterinary surgeons, complained loudly. From the instant in which the disease was declared non-contagious, the *cordon sanitaire* and the sacrifice became an useless and ruinous measure. Prince Stephen, the Govenor-General of Bohemia, was from that time led, if not to suspend, at least no longer rigorously to sustain, the execution of sanitary measures.

Immediately, the disease, which had been confined within a narrow space, invaded the whole of Bavaria, causing enormous ravages; and the Government of Vienna, placing but slight confidence in the discovery of the doctors, sent to the other districts affected the learned Director of the Veterinary School of Vienna, with extended powers; and this person having stated and declared that the disorder was certainly the contagious typhus, the usual measures were re-established with great severity. The disease was instantly arrested, and rapidly disappeared. The French veterinarians, who arrived at the moment at Prague, on their return from Moravia, being consulted by the local government, had no hesitation in declaring themselves of the opinion of their brother surgeon, in approving the energetic resumption of isolation and slaughtering.

This epizootie of 1844-5, which destroyed a million of cattle in Russia, and caused considerable losses in Gallicia, Moravia, Bohemia, and Lower Austria, did not enter upon any point in France, Saxony, or Bavaria, so near as were their frontiers, thanks to the sanitary measures prescribed by these several states, and enforced by them with great severity; which is a further proof of what cannot be too often repeated, that the typhus is not an epizootie developing itself like the scab, cholera, or plague, under epidemic influence or any medical constitution whatever, but a disease extending itself, and only capable of extending itself by means of *contagion*, which all the observations made up to this day tend to establish by the most conclusive evidence.

This is a truth so much the more important to repeat, in that it follows from it that a country threatened might always secure itself against it by closing up all the avenues of contagion.

Some years later—in 1856—we again entertained fears, in France particularly, in consequence of the Great Exposition. M. Renault and M. Imlin returned into the east of Germany. There they stated, after having pushed their investigations into the heart of Hungary, that the epizootie had been devastating that country every since 1849. It had been introduced there by the Russian armies, coming from Wallachia by Transylvania. It was in 1854 that the disease was at its height; and yet even then it was not spoken of in France. When, in 1856, they began to be terrified, it was closed up in a single circle—that of Buda—and seemed about to disappear.

The Hungarian race of cattle do not engender the typhus. The disease is solely due to the race of the Russian steppes; and it has reigned so long in Hungary only in consequence of the difficulty they labour under in adopting sanitary measures in a country still groaning under the consequences of a terrible war, and in which the Administration experiences great difficulty in organizing itself. The war had in a few days introduced the typhus into Hungary; but it requires a prolonged peace to root it out from thence.

In spite of the nearness of the infected countries, the contagion, thanks to the measures taken at the frontier, has not been able to enter Austria; and yet the slaughter-houses of Vienna never cease a single instant from drawing their supplies from Hungary, taking care however to admit into Austria only cattle coming from non-infected districts, and proved to be healthy. As to those suspected, they destroy them at the frontier, cut them up there, and convey the meat to Vienna in closed carriages, having that special service.

We have, therefore, no reason to fear the invasion of this terrible scourge. It takes its origin in the steppes of Russia. The states which separate us from those countries know the certain means of arresting the evil in its passage. Sanitary measures are enforced as soon as the danger is proclaimed, and executed with severity. The frontiers are guarded carefully, and if it is judged necessary to suffer animals to pass, healthy in appearance, but coming from a suspected country, the drove is not allowed to deviate from a passage specially marked out and completely isolated.

In the course of this same journey, Messrs. Renault and Imlin have stated that, at the same time, the cattle pest made great ravages in Poland, where it had been conveyed in 1855 by infected droves, brought by Jewish merchants to supply the corps of Russian troops, dispersed in many of the fortresses of that great province. It has ever since been established and maintained there, in consequence of the absence of sanitary arrangements; and in spite of the vigilance exercised upon the whole line of the Prussian frontier, it had penetrated into the Duchy of Posen, where it had invaded two villages; and into the province of Konigsberg, in which thirty-four villages were infected. Immediately, however, that the Prussian local authorities were informed of it, the disease had been circumscribed to its central point, and suppressed by the immediate slaughter of the diseased or suspected animals, and by the isolation, during a sufficient period, of the villages that had been infected.

M. Renault was assured that during this epizootie of Hungary, the states of Poland, Austria, and Prussia, had alone taken precautions; whilst Bavaria, Saxony, and the other German states had not considered it necessary to take any for themselves.

In order to show the facility with which the epizootie is detected as soon as it commences, and may be suppressed at once in Prussia, M. Renault explained the way in which the sanitary veterinary service is organized, and usefully worked in that country. And he adds that, in Prussia, the diseased animal, declared by the owner, is slaughtered and paid for at a third of its value. If the animal has not been declared, not only the proprietor receives no indemnity, but he is condemned in a heavy penalty. The price of suspected animals, which it is judged proper to sacrifice, is paid in full. The indemnities are levied beforehand by the State upon the proprietors, according to the number of animals possessed.

In some parts of Gallicia, Messrs. Renault and Imlin have visited districts in which, without the intervention of the State or local administration, similar measures are agreed upon and executed by the proprietors of cattle spontaneously; and in case of the sacrifice of diseased or suspected animals, they assess themselves in the same proportions.

We shall mention further, as a point of interest, the following fact stated by M. Renault: At different periods, inoculation has been held up as an excellent means of preserving cattle from the typhus, or, at least, of rendering it very mild. In this last epizootie, a large proprietor and cultivator in the neighbourhood of the Duchy of Posen wished to make trial of it, and of 100 cows inoculated *the whole died*. We consider the experiment as sufficiently conclusive not to be tempted to renew it.

M. Renault has finished this interesting communication, by demonstrating the weakness of the fears of England, in the actual state of the typhoid epizootie in Europe. In his estimation the measure taken by the British Government has no serious foundation. The disease which prevails at this moment in Holland, Hanover, Mecklenburg, and Denmark, is the peripneumonia (contagious); which also is found in France, and from which Great Britain is herself far from being exempt.

As to the typhus, it is neither more nor less to be feared now in England than it was one, or two, or six years ago; since there are few years in which it does not prevail in Poland, or in some part or other of Russia in the neighbourhood of the Baltic, so as to be at any moment prevalent in parts far enough removed from the provinces of Southern Russia, from whence English commerce obtains so many hides and so much tallow. Now, England has not for a long period adopted sanitary measures against animal productions of Russia; and yet those productions have not imported the bovine plague amongst the English cattle. M. Renault is convinced that the English Administration, when better informed, will soon rescind the rather precipitate measures it has recently adopted.

Finally, he adds that this measure is so much the less considerate that it is now proved that tanned leather, hides dried in the air, and melted tallow, the produce of animals infected with typhus, have never imported the disease.

We regret being unable to give more than an analysis, necessarily incomplete and distorted, of the clear and elegant extempore address, which during an hour captivated the attention of the assembly.

M. Yvart has completed the communication of M. Renault, by adding some new details, and by a spirited critique on an official note of the English Government, in which they have given the premonitory symptoms of the disease, which are nothing more than an inexplicable mélange of the symptoms of three or four very different disorders. (Signed)

VICTOR BORIE.

THE RUMOURED MURRAIN AMONGST CATTLE.

The dove has returned with the olive-branch in its mouth. The officer of the guard has been his rounds, and reports "All's well." The cry of "Wolf" is a mere cry, and nothing more. It really comes very much to this. All for our common good, and very much to our general satisfaction, has Professor Simonds been roughing it. For the last month or two has this learned gentleman been living upon schnapps and sour bread, and sleeping ten or twelve in a bed. And, all to keep the breeders, and feeders, and agriculturists of the United Kingdom out of harm's way. As the representative of the National Societies of England, Ireland, and Scotland, he has been travelling in search of a grievance. As such, he has been duly honoured and aided wherever he went; and he appears certainly to have made the most of his time. Every ambassador and minister of almost every state, in what is generally received as Continental Europe, has vied in furthering the Professor's object, and almost as invariably with the least possible success or effect. We have been anxiously awaiting here a whole budget of horrors and calamities. We have been expecting a something that it would tax the powers of *Times*-Russell to depict. We have been vivifying a scene of desolation and distress that must be taken only as the type of what is to happen to ourselves. And, lo! the Professor returns, like Mr. Canning's celebrated knife-grinder. In answer to all our eager inquiries, he has no grievance to talk over. After, perhaps, his rural life in Prussia, "his hat may have a hole in it—so may his breeches"—but "story, Lord bless you, sir! he has none to tell you." When Professor Simonds started on his mission, it appears Professor Dick, of the Edinburgh College, declared that it would be a difficult thing to find any case of murrain at all. And so it has been. Mr. Simonds has traversed all the dangerous ground, and it really seems very doubtful whether he has actually seen anything so formidable, as to be worthy of the name or import of what we recognize here as the cattle murrain.

Let us add the strongest possible commentary on this very complacent conclusion. We believe that no man could have done his duty better. If the lecture Professor Simonds delivered on Wednesday last to the Members of the Royal Agricultural Society was weak or illogical in any point, it was in this:—It evinced an almost over anxiety to fulfil its mission. Mr. Simonds appeared to think with Columbus, that if he returned without finding what he went to seek, he would be but badly received on his return. And so he laboured on until he came to the object of all his hopes in a little out-of-the-way, far distant, place in Prussia. Here the disease, or the murrain, or the Rinder-pest had been introduced, and here only was it likely to remain. There is no man sent so effectually to Coventry amongst our Continental friends as the unlucky wight who is known to have anything wrong amongst his stock. They communicate with him afar off. They draw a cordon around him; and for weeks and months are he and his outcasts from amongst the people. Our Professor himself had a narrow escape of leaving this tabooed ground with barely a rag on.

Let it not, then, be supposed that we have been over cautious or hasty in what we have done. Compared with our friends on the other side of the water, we are the most hap-hazard and indifferent set of people under the sun. We may, certainly, have thousand-guinea Shorthorns and hundred-guinea Southdowns, but we take our risk with all the boasted equanimity of Englishmen. Whereas, let anything suspicious break out in almost any territory on the Continent, and there are Government Inspectors, and Government Regulations, and Government prices, preventing, restricting and buying up anything like the semblance of disease, in an instant. It is rather a weighty matter, and one we never ought to forget, that if there be any contagious disorder to introduce here, other Powers have done more to prevent it than ever we have. This is the one great moral of the Professor's tour. In Holland, at Rotterdam, in Denmark, Mecklenburg, Berlin, Prussia, the most stringent measures are adopted. In fact, we know nothing like the extraordinary care taken to prevent disease spreading. The only question is whether we could ever be brought to submit to such a system.

The cases, we must repeat, which the Professor considers to be those of real murrain, or Rinder-pest, appear at the worst to be extremely doubtful. Mr. Simonds' argument is, that the disease must in the first instance be *introduced.* The strongest example, almost the only one he had of this, was at a village in Prussia, where a farmer brought in the pest with some strange beasts he had bought at a fair. These had travelled a hundred miles in three days, and it certainly seemed that they were attacked in the first instance quite as much or more from fatigue and exhaustion than anything else. Lord Feversham and Professor Dick put two or three pertinent questions on this point. The Chairman, however, thought it only justice to Professor Simonds to stop a discussion that might, had time permitted, been a very interesting one. According to the Professor's description the disease shows itself at first in the mildest possible form; a slight twitching or shivering, just as if the animal was suffering from fatigue or cold; just, in fact, as we fancy he might have been. Then, as regards its fatality, Mr. Simonds purchased a diseased ox for the Society—and not a bad bargain either—for the beast was rapidly recovering. The Prussian Government, however, in accordance with their extreme regulations, thought it better he should be slaughtered; and slaughtered he was accordingly. Like Cæsar's wife, to keep a position, all the stock abroad must be above suspicion.

We are promised that this lecture shall be given in full in the next number of the *Journal* to be issued in two or three weeks. We have so purposely refrained from entering on particulars that we might otherwise have given. As regards the chief features of such a mission, however, we have only to say that, while, the time and trouble have by no means been misemployed, our great satisfaction is to know that there is little to fear.

AGRICULTURAL EDUCATION.

In the preceding papers of the present series of articles which we had the privilege to present to the readers of the *Mark Lane Express* during the autumn of last year, we endeavoured to show that the term "agricultural education" has a much wider import—involving points of high importance—than may at first sight be supposed; that, in fact, it is not the mere transmission of knowledge according to the stereotyped forms of our scholastic institutions, nor even the still more advanced position of giving information in "special branches" calculated to be of service to the agricultural labourers in their every-day vocations, but that it involves preliminary processses not usually considered cognate to the subject. In the articles above alluded to, we enlarged upon the necessity of attending to the physical condition of the labouring population, where we really wished to attain to a healthy moral and intellectual development. In truth, it is impossible to overrate the importance of this "preliminary process." In the great work of the improvement of the labouring population of our agricultural districts, it is second to none of the agents we employ. It is now—or at all events should be, for the remark has been made *ad nauseam*—trite and common-place to point out that "as the dwellings so the population." We require no longer to bring up harrowing evidence from the purlieus of St. Giles', or the dens of "Tom-all-alones," to prove the truth of this. Evidence as bad and as soul-sickening as that with which but a week ago Dr. Letheby startled the metropolitans, can be obtained with marvellously little expenditure of time and trouble in nearly every town, and, we may say, large village in Great Britain. What we want now, is a belief, a full faith in the fact that this state of matters, which now beyond all doubt and cavil exists amongst us, does really interest all classes of the community; that it is not merely a calamity to be deplored, but one the recurrence of which can be averted by timely interference, and the doing away of which will be a positive gain, socially, politically, and commercially, to the whole community—no less to the rich and well-doing, than to the poor victims of the system we so heartily deplore. This is what is wanted now—this conviction that it affects our health, and, what to many minds is of still vaster importance—our wealth. Few, indeed, will be found, who have the hardihood to deny that the sanitary condition of our labouring population, *mural* as well as *rural*, is as bad as can be; and few, indeed, but who will willingly admit its evil influence intellectually and morally on those subjected to it. But the difficulty is just this, that out of all the hosts of those you so readily find non-denying or admitting these great truths, you will find wondrous few who take more interest in the matter, or who act as if it concerned them any more than in the recital of the death of the population of Polynesian Islands by starvation, or the extermination of a tribe of Red Indians by smallpox. The one is apparently as much out of the sphere of their sympathy or action as the other. It is not so, however; and it is now the work of the sanitary reformer to educate the mass of the "well-to-do" classes to an importance of the great truth, that the condition of the sub or lower strata of the community must and does daily affect that of the super or upper strata. We know enough—God knows, more than enough—of the condition of those same lower strata; and truly there is much to appal, little to relieve the mind in connection with it. It is not a knowledge of the effect, but of the cause, that we think desiderated amongst the upper classes. They are in the condition of the savage who saw the smouldering fuse of the "shell," but required to be made aware of the fact that there was death in its explosion, before he could even desire to flee from the coming doom. Nothing is so dangerous as ignorance. And so with the great question of the sanitary condition of our labouring population. The evils connected with it are such that the hand of time cannot heal, but rather festers and renders still more malignant. They have no self-contained power of recovery; and if they had, each succeeding day weakens its force and abates its energy. The cure, if cure is cared for, must come from without. The waters of any pool we may have set up may be moved daily; but, as of yore so now, the impotent and the lame must be lifted into it, to receive its healing virtues. Truly, as waited wearily for years the sick man by the side of Bethesda's pool, "for he had no man, when the water was troubled, to put him into the pool"; so wait many wearily now for that time when the much-needed help will be given them. It is but sand-blind folly to suppose that those evils which press so heavily upon our labouring poor have within themselves the power of self-removal or self-healing. The more the subject is investigated the more fully convinced are we that there is, and can be, no hope of ameliorating the condition of our labouring population if the task of instituting a better order of things is to be left to the labouring population themselves. In towns this task must be undertaken with a boldness and decision equal to the emergency of the case by the Corporations or owners of property, and in the country districts by the landowners. Such, indeed, are the views of an association now in the third year of its existence*, and the directors of which can with no small degree of satisfaction point to their labours as evidence of the necessity there is for the inauguration of similar institutions throughout the country.

Many, doubtless, will eagerly remark that all this discussion about sanitary matters has little reference to the country; that the plague-spots of the towns have no parallel in the villages and hamlets there. But it were an easy task to show the fallacy of this opinion. We may have day-dreams of rural felicity, and may complacently draw our notions of country life from the got-up shams of stage conventionalities, or the namby-pamby stuff of some cockney poet. But a day's ramble amid our rural districts and but a few looks at our rural dwellings will soon dispel these pleasing fancies, and painfully prove that the air in the country hovels of the labouring poor is no less fœtid than in the dens of their city brethren, though overlooked by a clearer sky and surrounded by more pleasing objects; nor will the truth be less pointed, or the evidence less complete, that filth, squalor, and their concomitants, disease, recklessness, and depravity, are not merely the adjuncts of the pestilential quarters of our cities, but may be met with in their most hideous form in spots far removed from the hum of cities, where the low wail of hopeless disease or the shout of the ruffian may mingle with the song of the lark and the merry sounds of rural life. Not always, we may say rarely, is the quiet repose in which a hamlet lies bathed in the rays of a setting sun indicative of the condition of its inhabitants: "'tis distance lends enchantment to the view;" and a close inspection will in all likelihood show, that instead of affording pleasing studies for the poet or the painter, it requires rather the investigation of the moralist and philanthropist to denounce the wrongs and remedy the evils under which its inhabitants will be found to languish. But this notion of the superior condition of country life, and of all partaking of its labour, is confined chiefly, if not altogether, to the denizens of the town. Few connected with rural affairs can shut their eyes to the evils which weigh so heavily on their labourers. They may deny that they have any claim on their sympathy, or any right to demand their help; but the existence of the evils they are not ignorant of. But in the midst of so much indifference to this important question, it is all the more pleasing to meet with those who not only investigate it in all its bearings, but who make this investigation as the basis or ground-work of a system by which the evils are proposed to be remedied. And not the least praiseworthy of those who have begun to aid this important movement are those noblemen and gentlemen in the sister-country, who by their co-operation, personal and pecuniary, have tended to place on a secure and usefully practical basis the Association to which we have already alluded, and whose constitution, aims, and mode of operation, suggestive as these are, to all interested in the promotion of morality and all its attendant advantages amongst our labouring agriculturists, we propose in our next article briefly to detail.

R. S. B.

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* The Association for Promoting Improvement in the Dwellings and Domestic Condition of Agricultural Labourers in Scotland.

VIOLENT THUNDER AND HAIL STORMS.—The metropolis and its vicinity were visited on Saturday morning with a terrific storm of thunder, lightning, hail, and rain. The war of the elements commenced about one o'clock a.m., and continued, with scarcely any intermission, until half-past four, the lightning being most vivid, and the thunder rolling immediately over our heads. The nurseries in the northern districts of London suffered severely, several thousand squares of glass in hotbeds and greenhouses having been broken by the violence of the hail. We learn also from the provinces that a similar storm was experienced in Warwickshire, Buckinghamshire, Essex, Oxfordshire, and Yorkshire. The *Banbury Guardian* says that on Tuesday last a storm broke over the neighbourhood of Buckingham, denoted a few days before by the sinking of the barometer, attended by a cold N.E. wind, and hail—rude Borean guests. The thunder reverberated in crashing peals, though unattended with much lightning, whilst the rain and hail fell sufficiently thick and fast to create apprehension, with an occasional drift of hailstones of the size of an ordinary ink-bottle. At Stratford-on-Avon a similar storm was experienced on Friday last. The *Doncaster Gazette*, in describing another of these fearful visitations, says: "The town and neighbourhood of Crowle were visited on Thursday last with a severe hailstorm, which did much damage to the growing crops. The crop of flax was very much cut up; and the visitation has caused many parties to insure their produce against the serious losses which generally follow such storms." The *Essex and West Suffolk Gazette* reports that "a terrific hailstorm and awful tempest visited the neighbourhood of Saffron Walden for many miles round on Wednesday week. In the parish of Debden especially, considerable damage was done to a large breadth of the growing crops. On some of the farms the blades of acres of wheat and barley were literally shreded, and the beans cut in two. Hailstones fell as large as partridges' eggs. Such a storm has not been known in this locality for many years." The *Oxford Journal* says that "the town of Deddington and its vicinity was visited on Tuesday last, about mid-day, with a violent storm, accompanied with heavy thunder and lightning. Hailstones of considerable size fell, and the rain came down in torrents. Fortunately, its duration was short. We would recommend parties who have not already insured their crops to do so at once." We cannot too forcibly impress on our readers the absolute necessity of following the advice thus given by the editor of the *Oxford Journal*, by protecting their property against losses by hailstorms. If a fire occurs, some part of the produce of a farm, by the exertions of your neighbours and labourers, may be rescued from destruction; yet there are few, and they are the improvident, who do not insure against fire. But against hail there is no chance of salvage—no hope of escape when the storm comes across the farm; all the produce of the labour, skill, and outlay of the husbandman is wholly destroyed. The march of an army across a country would not create such universal ruin. Yet how many, although seeing this calamity brought on their neighbours by hailstorms, omit to secure themselves, by the outlay of sixpence for an acre of their produce, full protection for the value of their growing crops! We beg the attention of our readers to the advertisement of the Royal Farmers' Insurance Office, which will be found in our advertisement pages.

THE ENTIRE CAUSE OF SO MUCH BAD FARMING IN ENGLAND.

Sir.—The *Mark Lane Express* being the most scientific agricultural journal under the sun, I beg to state that it is as plain as the sun at clear broad noon-day that the owners of the soil are the cause of all the negligent and bad farming in England. Would it not be bordering on insanity for a tenant farmer to lay out hundreds of pounds in improving his landlord's estate, without a lease or tenant justice, commonly called Tenant Right, for unexhausted improvements? Death sometimes quickly takes away a good landlord, and leaves in his place a bad and oppressive one. The wheels of nature and of time were never made to roll backwards: the tide of reason, education, and science, long delayed, long checked and obstructed, has nevertheless set in, and common sense says that the more you educate the farmers, and the more scientific they farm, the plainer they can see that they require leases or a tenant right—live and let live, *alias* compensation. Equity calls out aloud far and wide, and boldly and truly says that the lords of the soil are blind to their own interest in not granting leases and tenant justice when a diligent tenant leaves his farm. It is highly expedient that the land stewards of the lords of the soil should be practical men, I mean men who know good farming from bad, or how can they handsomely reward the diligent tenant, and severely reprimand the slovenly and slothful; or are the tenants who farm without weeds, to be treated the same as they who grow more weeds than corn?

If good farming will not pay, bad cannot. Let the rising generation of farmers read the *Farmer's Magazine*, which will teach them to farm without weeds, at the same time show them the proper mould that cattle should be cast in; the far famed bull Master Butterfly and the Grand Turk for instance. Samuel Arnsby.

18, *Norfolk Street*, *Hyde Park*, *London*. *May* 27, 1857

AUSTRALIAN WHEAT.

Dear Sir,—I enclose the specimen of Western Australian wheats grown in York district, on the property of Charles Wittenoom, Esq., and will feel obliged by the notice of it in your valuable paper. The wheat has been injured in its journey home, as it came by a private hand, which caused much delay in its arrival.

Will you be good enough to return the wheat when done with?
Faithfully yours,
E. A. Bayly.

55, *Brunswick-square*, *Brighton*, *June* 5.

[We have received the specimen of wheat referred to in the foregoing letter, and can, without hesitation, pronounce it to be a remarkably handsome type of that grain. It is a variety of the *Triticum hybernum* kind, and was probably produced originally from seed of Kentish white wheat, which it resembles in the form of the berry, but in other respects exhibiting in a striking light the modifications producible in the wheat plant under the influence of soil, climate, &c. The ears—of which there were twenty on each stub—are about four inches in length, well set, and containing from seventy to eighty kernels each, of a bright semi-transparent white. Without being steely, the grain, as well as the chaff and straw, indicates the cloudless sky under which it was harvested; whilst the perfect freedom of the latter from dark fungous spots, proves the absence of blight or mildew. From the exceeding clearness of the grain, we should judge that it contains a large proportion of gluten, and weighs heavy in the bushel. We have been told of Australian wheat weighing seventy pounds per bushel; and judging from appearances, the specimen we are describing cannot be much below that weight. It certainly is calculated to yield an abundance of first-rate flour, if properly manufactured. We are happy to find that the cultivation of wheat is beginning to attract the attention of the colonists of Australia; being persuaded that by agricultural pursuits the future prosperity of that fine country will be better and more permanently promoted than by the search after gold, however profitable the latter may prove in individual cases. We therefore trust that the successful result of Mr. Wittenoom's experiment will lead others to follow his example; by which the productive powers of the country will be brought out and tested, and the colonists will render themselves independent of other lands for a supply of the first necessary of life.—Ed.]

LIFE OF WILLIAM SMITH.

THE FATHER OF ENGLISH GEOLOGY.

Smith may be a homely name, but William Smith, of Sarsden, the Father of English Geology, the discoverer of the laws of stratification, is a name of which the yeomen of England may well be proud. He came of a race of farmers who for two centuries had owned and cultivated small tracts of land in the counties of Oxford and Gloucester. It would be well for England if there were more of these cultivating proprietors. William Smith the younger, of Sarsden, yeoman, eldest son and heir-apparent of William Smith the elder, of Churchill, yeoman—so the marriage settlement set forth—married, in 1730, Lucy, daughter of Henry Raleigh, yeoman, of Foscott, in Oxfordshire. In consideration of her marriage portion of £100 her father-in-law settled on the bride certain lands, arable, meadow, and pasture, in Churchill-field, which when consolidated under the inclosure amounted to about ten acres, and were sold in 1807 for nearly £700.

William Smith, the subject of this memoir, was born in 1760, the same year which gave birth to Cuvier, the great French comparative anatomist, and the founder of the French School of Geology. In his eighth year his father died, and on the second marriage of his mother, the person to whom he had principally to look for protection was the eldest brother of his father, to part of whose property he was heir.

Born in an oolitic district, the fossils with which it abounded very soon attracted his attention. Its "pundibs," "poundstones," and "hog's-ear oysters," which were the playthings of his childhood, became the study of his riper years, and afforded an instance, as was remarked by Professor Sedgwick, how, with some minds, circumstances apparently trivial determine the whole tenor of after-life.

These pursuits found little favour from his more practical uncle, from whom he wrung with difficulty, and by dint of much entreaty, sufficient money to purchase a few books by which to complete the rudiments of the education which he had received at the village school, and to instruct the self-improving student in the elements of geometry and surveying. The interest which he took, however, in the draining and improvements of land found more favour with his uncle the practical farmer. He prosecuted his studies irregularly, and without instruction or sympathy, but with such ardour and success that at the age of eighteen he was taken into the office of Edward Webb, of Stow-on-the-Wold, a self-instructed mathematician like himself, but of a higher order, who was then engaged in the survey of Churchill-field for inclosure.

During his engagements with Webb, Smith was in continual activity, employed on professional labours, which caused him to traverse and survey the oolitic lands of Oxfordshire and Gloucestershire, and the lias clay and the red marls of Warwickshire. He visited the Salperton Tunnel, on the Thames and Severn Canal, and examined a boring for coal at Platford, near the New Forest, where some thin seams of lignite in the tertiary strata had led to the belief of the existence of regular deposits of coal. In those days such trials for coal were excusable, when the order of stratification was unknown; but the want of a general diffusion of geological knowledge causes them still to be as numerous as ever, and attended with as great a waste of money. The sums squandered in such absurd trials by those who denounce geology as all theory is incalculable. While engaged in these labours, all the variations of soil in the different districts which he traversed were carefully observed, and recorded by him for future use.

In 1791, Webb transferred to Smith, on his own account, the survey of an estate at Stowey, in Somersetshire. To this he walked, examining the rocks in his way. Here, to his surprise, he found the same red marl as that of Worcestershire, holding a similar position with respect to the lias and the superincumbent strata, and employed in the same manner for the improvement of the land. While engaged on this survey he was desired to examine and report on some collieries belonging to the same proprietor. His subterranean surveys of these pits, together with some sections which he drew of the strata, observed in sinking for the coal, convinced him that there was some regularity in the succession. The colliers admitted it for the coal measures, but denied it for the red earth above the coal. "On this point, however," said Smith in his notes, "I began to think for myself." His ability and assiduity, while engaged in this occupation, induced the neighbouring gentry to interest themselves in advancing his professional interests.

The profession of a land surveyor like Webb, in whose office Smith had received his professional education, combined much now confided to the civil engineer, such as the construction of machinery, and the determining of the motive powers of water. Canals were then as much the order of the day, as railroads have been in our time.

The formation of canals rendered necessary new projects for surmounting difficulties arising from irregularities of level, such as locks, caissons, and inclined planes. To these new objects Smith devoted his attention, and seized every opportunity of acquiring information, and in qualifying himself for the new career which was opening on him. "This," says his nephew, and biographer Professor Phillips, "was a tide in his affairs, which, had he followed the middle current, without stopping to examine the banks, would have led him on to fortune; and even under the great disadvantage of being subject to a strong deflecting current, his career was not unprosperous, and he joined with tolerable compactness the decisions of an engineer to the inquiries of a geologist."

In 1793, while engaged in levelling for a canal, he had opportunity of proving the truth of a speculation which had entered his mind as a conjecture only during the course of his previous operations, namely, that the strata above the coal, which had been originally deposited horizontally, rested upon one another in an inclined position "like the slices of bread and butter in a plate," to use his own homely simile. The levellings which he executed in two parallel valleys confirmed these views; for in each of the levelled lines the strata of red marl lias and oolites came down in an eastern direction, and sunk below the level, yielding place to the next in succession.

He knew at the same time that the position of the strata of coal in Somersetshire was not generally conformable to the red marl and other strata above the coal series. He was aware also that the faults which divide all the coal strata underground are not found in general to affect the strata which rest on the coal measures.

Smith had soon an opportunity of confirming these general views respecting the succession of the strata, by more extended observation.

On the completion of the Canal Bill in 1794, the committee of management deputed two of their members to accompany Smith on a tour of inspection respecting canals. This tour, which occupied between one and two months, and likewise embraced the observation of collieries, extended over 900 miles, and reaching Newcastle by one route, and returning by Shropshire, Wales, and Bath, gave him an opportunity of testing his preconceived opinions respecting the order in which the strata succeeded one another.

During this tour he found his general views justified, and the strata in the vicinity of Bath prolonged in the same general order of succession to the eastward. From the top of York Minster he recognised by their contours the chalk strata of the Wolds; and from this information, and from their relative position, and their ranges on the surface of the lias and the red marl, occasionally seen on the road, he was enabled to lay down on his map, with a considerable approximation to accuracy, the prolongation of the chalk of Wiltshire and the oolites of Somersetshire, through the eastern parts of Yorkshire.

Smith was engaged for six years in superintending the works of the Somersetshire Coal Canal, during which time his geological discoveries remained comparatively unknown to the public, though he had frequent opportunities of rendering them available in practice, by informing the contractors what would be the nature of the ground to be cut through, what parts of the canal would require most care in order to keep them watertight, and what would be the most advantageous system of work. It was during this period that the necessity for close observation of the different kinds of rock, sand, and clay, which were to be cut through on the line of canal, led him to the conclusion that certain fossils distinguish certain parts of the series. He had previously obtained a glimpse of this generalization, from the plants of the coal measures and their absence from the red marl; but these extensive cuttings through more fossiliferous beds, confirmed, extended, and generalized them. They were embodied by him in the following general conclusions: That each stratum contains organic fossils peculiar to itself, by which, in cases otherwise doubtful, it may be recognised and distinguished from beds otherwise like it, but in a different part of the series.

The observations which the works of the canal rendered necessary, led him also to a distinction between stratified deposits and those superficial accumulations containing far-transported materials, to which the name of "diluvium" was given by him (not by Buckland, as we stated in a former article respecting the geological evidence of the Deluge), and which have since received the names of "northern-drift" and "erratic tertiaries." This change of names involves no change in the nature and distribution of these deposits; it is only that more extended observations have brought to light more extended knowledge respecting facts connected with the mode of their formation, and more accurate information respecting their distribution. Their marine origin has since been proved—not merely conjectured—by the marine shells of existing species which have been found extensively distributed through these deposits at various elevations, extending to near 1,400 feet.

The peculiarities which distinguish them from other marine deposits have been proved, on a long string of evidence such as would be received in any court of justice, to be confined to certain latitudes in the northern and southern hemispheres, and to be connected with climatical conditions such as those of the circumpolar regions, having had at the period these deposits were formed a greater extension than at present into the temperate latitudes. The denudation of these marine beds during the period of re-elevation and submergence having been proved by the presence of marine shells, it is to be presumed no evidence is necessary to prove that they have been reconverted into land. Out of this re-elevation and the rearrangement of these materials along the lines of drainage, during the period of reconversion into land, arose that irregularity of distribution instead of in continuous masses, which caused these deposits to be attributed for a time to a transient irruption of the sea, instead of to its long-continued action of a different kind from that prevailing in any but arctic latitudes.

But to return to the history of William Smith. The possessor of these important generalizations continued to reside in the obscure village of High Litton. From this residence he continued to direct all the operations on the Somersetshire Canal. In the early part of 1796 he had begun to commit his thoughts to paper for publication, and in 1797 he drew up a plan for such a work; but it was not till 1799, after his engagement with the canal company ceased, that he made public his intention to commence a general work on the stratification of Britain, and to enter on the prosecution of an actual survey of the geological strata of the whole of England and Wales. Whilst he had found his geological knowledge of considerable advantage to him in the works of the canal, it was impossible for a plain, simple-minded, and enthusiastic man to avoid explaining his views, to such intelligent persons as would listen to them, though he found few who interested themselves in his speculations any further than as they appeared to promise immediate practical results. It is a very common failing, arising from the practical turn of the English mind, to undervalue discoveries in pure science, which, though they often appear at first destitute of practical applicability, have, after a time, revolutionized the whole course of economic practice.

Mr. Thomas Davis, agent to the Marquis of Bath, and author of the report to the Board of Agriculture on the agriculture of Wiltshire, when informed by Smith of the constitution of the Wiltshire hills and vales, and their relations to the neighbouring districts, exclaimed, "That is the only way to learn the true nature of soils." "Even such sympathy," says Professor Phillips, "was highly prized by the modest father of English geology; and when geology had gained a high degree of favour in public estimation, he often recounted, among many mortifying instances of disregard, this apparently slight and solitary instance of encouragement."

But while Smith pointed out the effects of the regular strata of our geological maps in defining the general agricultural character of a district, he was too well aware of the importance of the superficial deposits to overlook, as some have done, their influence in producing soils of every different value, upon each of our geological formations.

In 1799 his connection with the canal company ceased, and he was now not only at liberty for more extended geological inquiries, but placed under the necessity of making known the results of his discoveries, and of founding on them a professional practice which might provide the expense of travelling, in order to verify and extend them, and to fill up the outlines of a geological map of England and Wales. In these objects he was successful.

The neighbourhood of Bath is rich in fossils, and many collections of them had been formed by those who were ignorant of their value for the identification of strata. It was probably after seeing one of these collections that Smith wrote the following passage in a note-book, dated January, 1796:—

"Fossils have been long studied as great curiosities, collected with great pains, treasured with great care, and at a great expense, and shown and admired with as much pleasure as a child's rattle or hobbyhorse is shown and admired by himself and his playfellows, because it is pretty; and this has been done by thousands who have never paid the least regard to that wonderful order and regularity with which nature has disposed of these singular productions, and assigned to each class its peculiar stratum."

This portion of his discoveries became public property, and exercised an influence on the geological views of those who knew nothing of the author of them. Smith quickly acquired extensive employment in the practical application of his knowledge to mineral surveying and draining of land. He had become acquainted with the Rev. Benjamin Richardson, then residing at Bath, who possessed a large collection of local fossils, most of which he had collected himself, but had no knowledge of the order of the strata, nor of the connexion of the organic remains with that order. Smith, on the other hand, had little knowledge of the true nature of these organic forms, or their relations to existing types. That certain of his fossils had been found in certain rocks Richardson could not deny;

but he was almost incredulous on the subject of Smith's views respecting their relations to peculiar strata as a general fact. He acceded to a proposal made by Smith that they should undertake some field examination to test the truth of his views. The Rev. Joseph Townsend, author of "Travels in Spain," was associated with them. One of the places they visited was Dundry Hill. From its form and position with respect to the lias at Keynsham, Smith had inferred, without having visited it, that this hill was capped by the lowest of the Bath oolites, and expected to find on it certain fossils which that rock contains near Bath. To the astonishment of his associates Smith's predictions were verified, both as to the nature of the rock and the fossils it would be found to contain. On one occasion, when the three friends were dining together at Richardson's, it was proposed that a tabular view of the main features of the subject, as expounded by Smith and verified by their joint observations, should be drawn up in writing. Richardson, at Smith's dictation, wrote down the strata according to their succession, in a descending order, commencing with the chalk, and numbered in a continuous series down to the coal, below which Smith's researches had not extended. To this was added, in their proper places, a list of the most remarkable fossils obtained from the several strata. The names were principally supplied by Richardson. Of this document thus jointly arranged each party had a copy, with no stipulation as to the use that should be made of it. It was extensively distributed both at home and abroad, and remained for a long time the standard for descriptions of the strata near Bath.

The great object of Smith's ambition was to map the strata of England and Wales; and the wetness of the year 1799, which caused attention to be directed to the drainage of land, in which his knowledge of the alteration of porous and retentive beds gave him great advantage, caused him to be extensively employed in works of this kind, which he prosecuted with great success. During his connection with the canal company his remuneration had been one guinea a-day, with allowance for extraordinary expenses. From the demand, however, for his services in his new occupation, he raised them to two guineas from 1801 forward. This, at a later period, was increased to three guineas. "Any other person," says his nephew, "equally moderate in his personal expenses, and engaged almost every day in the year, would at least have escaped poverty. But at no time in his life did Smith abound in money. The cause of this was the lavish manner in which he expended it, in endeavouring to complete his favourite object, the mapping of the strata of England and Wales. For this purpose he walked, or rode, or posted in directions quite out of the way of his business; and when he had thus emptied his pockets for what he deemed a public object, he was obliged to have recourse to night travelling, in order to enable him to keep his professional engagements. Those who deem such a course imprudent," adds his nephew, "can scarcely blame the motive on which it was founded. His personal loss became the public gain; his individual strength performed what ought to have been a national work; and the sufferings to which the system ultimately conducted were borne with more than common fortitude."

Smith was employed in a great variety of works by that renowned agriculturist, Lord Leicester, who not only availed himself of his services in draining and forming water-meadows, but recommended him extensively to others. Among his most successful performances of this kind was the draining the Prisley bog for the Duke of Bedford, on which the celebrated Elkington had expended large sums in vain, and its conversion into a valuable water-meadow.

In 1801, at the urgent advice of his friend Richardson, who was apprehensive of another publishing those views which should only emanate from Smith himself, he issued proposals for a work on the strata of England and Wales. By Lord Leicester he was introduced to the Duke of Bedford, by whom he was not only extensively employed as at Holkham, but encouraged, and aided in his geological investigations; Mr. John Farey, the duke's agent, was commissioned to accompany Smith in an exploration of the county near Woburn, for the purpose of determining the true succession of the strata there, their most suitable agricultural appropriation, and the best means of improvement. On this expedition Smith astonished Farey and Mr. Brown, of Leighton Buzzard, who had joined them, by predicting, as he had previously done at Dundry, the kind of fossils they would find in the strata at the base of the chalk. The Duke of Bedford, being thus satisfied of the truth and value of Smith's geological pursuits, authorized the collection of rocks and fossils from all parts of the kingdom, for the purpose of arranging them in the order of stratification, and instituting a chemical examination of them. Nothing could have been more congenial with Smith's wishes. The death of this nobleman, however, put an end to the plan.

Through his connexion with these influential patrons Smith became introduced, during his attendance at agricultural meetings, to Sir Joseph Banks, Arthur Young (the Secretary to the Board of Agriculure), Mr. Crawshay (the Iron King), and others. He had also the honour of exhibiting and explaining his maps to the Duke of Clarence. A plan was proposed for associating him with the Ordnance Survey, and thus anticipating the Government Geological Survey undertaken in after-years at the suggestion and under the direction of Sir Henry De la Beche. The time, however, was not ripe for it. Smith was still too much in advance of the practical and scientific men of his day, and this project, like several others proposed by those who took an interest in the advancement of his views, and were aware of their real value, came to nothing. At the instance of Sir Joseph Banks, to whom Smith was introduced at one of the Woburn sheep-shearings, in 1804, a subscription was opened for publishing the results of Smith's labours, according to a plan suggested by Richardson, in 1801. To this Sir Joseph Banks put down £50 as the moiety of his subscription. Others were paid or promised. The plan, however, as usual, came to nothing. Various circumstances prevented the publication: the failure of Debrit, the publisher, who had undertaken the work, was one; the course of geological studies then carried on by the rival schools of Hutton and Werner was another. The Wernerians disregarded organic remains, or, as they called them, "extraneous" fossils, altogether, and looked upon attempts to identify strata by a method so different from their own as "empirical," and beneath "well-educated geognosts," as they styled themselves. The Huttonians, conducting their investigations among the granitic and other crystalline rocks destitute of organic remains, paid even less regard to fossils than the Wernerians, and the public at large took little interest in what they did not understand. Nor was Smith himself wholly free from blame. Instead of fulfilling his engagements in making public the knowledge which he had already acquired, he devoted all his energies and all the time he could spare from his professional occupations to extending his knowledge of the strata, and completing a work which was too great for the powers of any one individual.

These causes, together with a certain inability under which he laboured, to condense his ideas, and to write for the press, though a most voluminous writer of notes, conspired to retard the publication of his discoveries, and combined with prejudices which the novelty of his discoveries occasioned in the minds of many led them to doubt their reality. Like every man who attempts anything that is in advance of the age, he had not only the practical, but the scientific men to contend with. Perhaps something must be attributed to prejudices arising out of the high antiquity, compared with that of the human race, which his discoveries assigned to the earth, and to the refutation which they afforded of received opinions respecting the shells embedded in the solid rocks being proofs of the Deluge. To that event they had long been referred, though in utter defiance, as we showed in a former article, of the whole tenor of the sacred narrative. But though the geologists of that period gave little heed to Smith's discoveries, they began to be better appreciated when at a later period the Geological Society was established, in 1807, for the collection of facts. Even then, however, Smith himself was not held in the esteem among geologists which he deserved.

Farey, who owned himself as a pupil of Smith, and always asserted his priority of discovery, together with others who had appropriated his knowledge without acknowledgment, were made honorary Fellows; Smith himself, however, was passed over unnoticed. He had ample justice, however, done to his claims to be the founder of the English school of geology at a later period, as we shall show hereafter, through the instrumentality of Dr. Fitton and Professor Sedgwick.

In the end of 1812, Smith received proposals from Mr. Carey, to publish the map of the strata; and terms were soon settled. The work commenced with the beginning of 1813, and was completed in 1815. Thus the energy of an enterprising tradesmen effected what had been expected in vain while reliance was placed on great and powerful patrons, or the assistance of the Government.

Smith had hitherto laid down on the county maps of that eminent engraver the result of twenty years' labour. These maps were too full of the names and designations of political geography for the purpose. Carey, therefore, undertook the drawing and engraving of a new and very elegant large map, better suited to the object in view.

In 1814 some portions of the map were completely coloured, particularly four sheets of the vicinity of Bath, and Smith was exhibiting them before the Board of Agriculture at the time the Allied Sovereigns were entering London. On that occasion Mr. Benjamin Hall, the son-in-law of Mr. Crawshay, then deceased, who had taken an interest in Smith's researches, and had given him £50, as the first half of his subscription for their publication, came to Smith, and expressed his willingness both to complete the payment, and to accompany it by a subscription of his own. Lord Leicester, the Duke of Bedford, and Lord Hardwick contributed similar subscriptions, to soften the poverty which now, in the zenith of his success, began to close around the author of this great work.

In 1815 a coloured map of the strata of England and Wales was submitted to the Society of Arts, and was published in August of the same year, dedicated to Sir Joseph Banks. His fame as an original discoverer was now secured. Geology had kept him poor by consuming all his patrimony as well as his professional gains. The neglect of his employers too often left these unpaid, and an unfortunate enterprise completed his ruin. On a small property, beautifully situated near Bath, which he had purchased and greatly improved, he was tempted to lay a railway, for the purpose of bringing the freestone of Combe down to the coal canal, and to open new quarries in this stone. But the continuity of the bed was broken, by an undiscovered fault. The supply failed, on which the success of the whole enterprise depended; a load of debt remained to be discharged, and the disaster fell heavily on others besides himself. As one means of reducing his difficulties he proposed to sell his much-prized geological collection of fossils. Through some friends a negociation was opened with the Treasury. The collection was purchased for the sum of £500, to which £100 was added in 1818 for an additional series obtained from North Wilts and Essex. The whole sum thus received from the Government amounted to £900: the number of species was supposed to be 695; the number of specimens 2,657. The collection, which being arranged upon a peculiar plan of Smith's, on sloping shelves, to represent the strata in which they were found, could not well be brought into unison with the rest of the series of objects open to the public, was transferred first to one department of the British Musuem, and then to another; and the present state of this, the first stratigraphical collection ever made, is unknown. If in existence, it might surely be transferred to some local museum, where it would be of inestimable value; and where could it find a more appropriate resting-place than in some of those counties most intimately associated with Smith's professional labours?

In 1817 a portion of the descriptive catalogue of this collection was published, and in the same year was issued the first number of another work called "Strata identified by Organic Fossils." It consisted of numerous figures of fossils, engraved by Sowerby. But the expenses of this work left to the author very little profit, and it was soon discontinued.

At the same time commenced the publication, by Carey, of a large series of county maps and sections, on the same plan as that of England and Wales, but carried out to greater minuteness than in the larger work.

From this time to 1818, Smith continued to pursue his professioal labours in Norfolk, where he had previously acquired high reputation by his skill in land-draining, and the construction of water meadows, and by the exclusion of the sea from the marshes bordering the estuary of the Yare and Waveney, in Norfolk and Suffolk. Forty thousand acres of valuable land had been for two years under water, and the commissioners and their engineers were vainly endeavouring to stop the breach with timber and masonry, which by the abrupt opposition which they offered only increased the violence of the breaches. With some difficulty Smith obtained leave to follow his own plan, which was to stop the breach with sand disposed with such a gradual slope as he had observed it to assume on the shore, from the action of the breaches, and he sealed down the sand with gravel. The plan was entirely successful, and in less than a year the breach, more than a mile in length, was closed, and the engines at work to relieve the land from water.

Smith had now long been known as a successful mining and draining engineer. He had established a lucrative practice, and had spent the proceeds of it, together with his small patrimony, in the accomplishment of that which should have been public work. Scientific honours now awaited him.

In 1818 Dr. Fitton, in his Notes on the Progress of English Geology, asserted Smith's claims to the claim of an original discover, and it was the favourable light in which they were placed in this work, that led to the subsequent recognition by the Geological Society, who had previously kept aloof from him, and he from them. In the mean time his pecuniary difficulties were fast closing around him. The unfortunate speculation in which he had engaged, in connexion with the estate which he had bought near Bath, and greatly improved, completed his ruin. He gave up his house in London, was obliged to submit to the forced sale of that little property, together with his books, only preserving his manuscripts through the kindness of a friend. He now for several years became a houseless wanderer, chiefly in the counties of Yorkshire and Westmoreland, deriving a precarious subsistence from such professional occupations as still sought him in his retirement.

During this time he completed a geological map of Yorkshire, aided by his nephew, Professor Phillips. It was during this period, while occupied with a professional engagement with Colonel Braddyl, he persuaded that gentleman to sink for coal through the magnesian limestone, in opposition to the practical opinions of the most eminent coal-viewers of the district. The result was the valuable South Hetton Colliery. During this period an urgent official application was made by the Russian Government for his services as a mining engineer in that country, which he would probably have accepted if the seclusion in which he lived had not prevented its reaching him till it was too late. While engaged in Yorkshire in completing a county map of its geology, and in the professional pursuits which yielded him a scanty and precarious subsistence, he became acquainted with Sir R. Murchison, whom he accompanied on an examination of the oolites of the Yorkshire coast. It was at a later period that he became acquainted with Dr. Buckland, to whom he was introduced in the shop of Mr. Bliss, the bookseller, of Oxford. His introduction to Professor Sedgwick was at a later period, when the latter was exploring the rocks of the English lake district. The quarrymen, who had noticed Smith's curious habit of testing the hardness of stones with his teeth, concluding that he and the Cambridge professor must be of the "same trade," made them acquainted with one another. Through the instrumentality of this influential geologist, due justice was done in a few years to Smith's claims as an original discoverer. In 1831 the Council of the Geological Society awarded to him the first medal, struck with part of the proceeds of a fund bequeathed to them by Dr. Wollaston for the purpose of awarding original discoverers. In announcing to Smith the award, Professor Sedgwick, then President of the Geological Society, declared that they were compelled, by every motive which the judgment could approve and the heart could sanction, to perform an act of filial duty before they thought of the claims of any other man, and to place their first honour on the brow of the Father of English Geology. "If," he added, "in the pride of our present strength we were to forget our origin, our very speech would betray us, for we speak the language which he taught us in the infancy of our science. If we, by our united efforts, are slowly raising the pinnacles and chiselling the ornaments of one of the great temples of Nature, it was he who gave the plan and laid the foundations and erected a portion of the solid walls by the unassisted labour of his hands."

The medal was not then struck, but it was presented to Smith in the following year, at the meeting of the British Association, at Oxford. At the same time Smith was gratified by the further announcement that a pension of £100 a-year had been assigned to him by the Government, at the urgent request of the whole body of geologists, supported by the influence of the present Lord Carlisle.

One of Smith's most zealous patrons was Sir John V. B. Johnstone, of Hackness, who, on succeeding to his property, appointed him manager of the Hackness estates. He had hoped the comparative leisure which this occupation afforded would have been employed by Smith in writing the results of a long life of observation; but in this he, as well as the rest of Smith's friends, was disappointed. Writing for the press, as we have said, was not Smith's talent, though a most voluminous writer of notes. These, Professor Phillips considers to have been the happiest years of his life. He wrote much and meditated more, but arranged nothing for publication. He produced, however, a geological map of the Hackness estate, beautifully executed, in great detail. The time will come, though it has not yet arrived, when such a map, or rather maps, showing the variations of soil, whether derived from the superficial deposits or the substrata, as well as the mineral variations of the latter, will be deemed a necessary appendage to every estate. After living at Hackness six years, growing weary, as he says, of farming pursuits, he resigned his situation, and was allowed by Sir John Johnstone £20 a-year for occasional advice and visits.

During these latter years of his life Smith was a constant attendant at the meetings of the British Association. At its Dublin meeting, in 1835, the University of Trinity College conferred on him an honorary degree of Doctor of Laws, of which he was not a litttle proud.

It was on his way to the meeting of the Association at Birmingham, in 1839, that he died, after a few days' illness, at the house of his friend, Mr. George Baker, at Northampton. He had spent several days on a visit to that gentleman, to examine his fine collection of Northamptonshire fossils, making some geological excursions among the oolitic rocks of the neighbourhood. A slight attack of diarrhœa, which he neglected with the usual aversion to medicine, of one who through his life had enjoyed robust health, took an unfavourable turn, and terminated fatally on the 28th of August.

Born on the oolites, on the observation of which his fame was laid, he had often expressed a wish to be buried on them; and on the oolites he was buried, in the beautiful antique church of All Saints, Northampton: and there, by a subscription among geologists entered into at the instance by Dr. Buckland, a tablet has been erected to his memory.

Smith's three capital discoveries were, that the strata have regular order of succession, and are distinguishable from one another by their organic contents; and that these regular marine deposits are distinct from the superficial accumulations, to which he gave the name of "dilvuvium." It appears that the first of these discoveries was known to a certain extent to Smeaton, the founder of civil engineering; Mitchel, Woodwardian professor at Cambridge; and Cavendish, the discoverer of the composition of water. Their discoveries, however, had not been published, though Cavendish had undertaken a tour of verification.

The association of certain organic remains with certain strata, was a discovery peculiarly his own, which has given an entirely new direction to geological investigations, and has placed the science on a sure and permanent foundation. The same may said of his distinction between these regular strata and those superficial deposits to which he gave the name of "diluvium." The more extended study which these deposits have of late years received has confirmed the soundness of the distinction, though it has furnished a refutation of the transient nature of the aqueous action to which he ascribed them. This department of geology is that which most demands the attention of the agriculturist, in consequence of the extensive distribution of the superficial deposits over the British islands, and in many cases their great depth. It was their fragmentary character, arising from the denudation to which they have been exposed during the conversion of the bed of the glacial sea into land, and to the reconstruction of the denuded materials along the lines of drainage, which caused them to be attributed to the transient irruption of the sea, instead of a long-continued action beneath a sea of peculiar characters.

To these deposits, and to another and subsequent deposit, characterized by a different group of fossils, formed by some hitherto unexplained and anomalous aqueous action, and formed after the bed of the erratic sea had been reconverted into dry land, and had continued dry land for a long period, it is that the variations of soil upon every geological formation mainly depend.

As regards the rocks themselves, it is on the general mineral characters of a group consisting of many alternating strata that the agricultural relations of a district chiefly depend. Upon every geological formation, however, we have soils of every quality, from the best to the worst, arising from the depth and composition of the superficial deposits. As regards mineral characters they vary not only vertically from alternation of deposits of different composition, but horizontally from changes in the same bed in different parts of its course. Of none of these changes do our geological maps take cognizance. The time has come, as Professor Johnstone said, many years ago, when agriculture requires geological maps of her own, which shall show both these variations. The construction of such maps is not the proper work of the State, for the benefit of individuals. To the State belongs the construction of general maps of classification. The construction of such detailed maps as agriculture requires is the proper work of each landowner for his own property. Such maps, constructed by properly-qualified persons, would repay many times over the cost of construction, by the undeveloped resources which they would bring to light. They will be the work of a future generation: they are too much in advance for the present. Landowners in general are very eager for geological information respecting their property, but because there are amateur geologists and government geologists, neither of whom can give the information they require, they think they are to have it for nothing, and have not yet learned in this respect that the labourer is worthy of his hire.

THE MEAT MANUFACTURE.

The conversion of vegetable substances into the structure of animals is one of the most interesting, and certainly not the least important, of those regular and gradual manufacturing operations in which the agriculturist is engaged. It is, to a certain extent, the finishing point of all his labours—the ultimate design of all the mental and manual agencies which are called into action by the daily requirements of his very intricate vocation. For this end he studies the nature of the soil upon which he operates, the means which are best calculated to increase its productiveness, the plants which he grows, and the cultivation suitable for each variety; the distinguishing properties of the different breeds and varieties of our domestic animals, and their adaptation to the particular circumstances in which it is intended to place them; the house accommodation requisite for their use, and the most economical modes in which their food may be prepared and consumed.

It must be owned, however, that, in common with nearly every department of practical agriculture, the rearing and fattening of our domestic animals are too often looked upon as being something of which everyone naturally possesses a sufficient amount of intuitive knowledge to enable them at once, and under any circumstances, to become proficients, without the formality of previous study, or that acquaintance with the subject which in any other profession would be considered indispensable in order to ensure even a probability of success. To this cause we may trace most of the failures which we meet with, the imperfect state in which what ought to be the finished article is frequently offered for sale, and the consequent disappointment as to results we often hear expressed.

So far from being easily understood, the *Nutrition of Animals* is, perhaps, the most complicated department which exists in agricultural science; one in which inquirers as to "the why and wherefore" are, as yet, only groping their way; requiring to be much further investigated before practice and science can be considered as fully united. A sufficient amount of research, however, has been made into this subject to enable us to understand the rationale of our business, and, in some degree, to prevent that waste which must arise from the indiscriminate use of those substances which we employ as the food of animals, without reference to their fitness for the purpose which we intend them to serve, and also the nature of those agencies which exert an influence, whether favourable or the reverse, on the full development of the nutritive powers of those substances.

In building up the structure of an animal, it is necessary to bear in mind that the elements of which the food is composed are of two different classes; *first,* those containing nitrogen, which enters into the composition of bones, hair, horn, wool, skin, blood, and muscle or flesh; and, *secondly,* those in which nitrogen does not exist, and which are destined to support respiration and animal heat, and also to produce fat.

All the elements which produce the flesh and fat of animals are found to be gathered together in their food, and ready to be converted to their several uses without undergoing any material change. In vegetable bodies we have vegetable albumen, gluten, and casein, which are identical with flesh, the curd of milk, and the blood. The phosphates, common salt, &c., which exist largely in the bones, muscles, blood, and milk of animals, exist also in plants; whilst the starch, gum, sugar, and oils which constitute fat, and are the elements of respiration, are likewise found, ready formed, in vegetables. The proportions, however, in which these exist vary in different classes of plants, and hence the different results which we experience from the use of different kinds of food. Growing animals require a different dietary from those which are fattening for the butcher, in order to effect the results which we are desirous of producing. Thus, in the former, we wish to build up the bony structure, and to insure a full muscular development; whilst in the case of the animal preparing for the butcher, we must draw largely not only on the flesh-producing elements of food, but also on the non-nitrogenous or fat-forming classes. There must, however, at all times be a proper mixture of the elements of nutrition and of respiration, otherwise there will be a failure. If an animal is fed exclusively on one description of food, one, for example, which contains merely the elements of nutrition—that is to say, if the food only produces flesh—the animal so fed would gradually sink and die, in consequence of the absence of those elements which are necessary for maintaining the temperature of the body and the production of fat. In like manner, an animal cannot exist on non-nitrogenized food, such as starch, gum, or sugar, which consists merely of the elements of respiration, without any of the flesh-forming principles.

The following table exhibits the elements—first, of nutrition, as existing in plants, and in the flesh, blood, skin, wool, hair, and horn of animals; and, next, the elements of fat and respiration. The similarity which exists in the composition of the substances in each class shows the close affinity they bear to each other. In the composition of fat, indeed, there is a considerable difference in some respects from that of starch, gum, and sugar; the cause of which is, that whilst the three last-named substances—starch, gum, and sugar—do promote the production of fat, it is only when in excess that they do so, their primary operation being to support respiration and animal heat. They all agree, however, in not containing nitrogen :—

100 parts of	Elements of Nutrition.									Elements of Fat and Respiration.			
	Vegetable Fibrine from Wheat.	Vegetable Albumen	Vegetable Casein.	Muscle.	Blood.	Skin.	Wool.	Hair.	Horn.	Mutton Fat.	Potato Starch.	Gum.	Sugar of Milk.
Carbon	54.2	59.99	54.138	51 83	51 96	50.99	50.65	51.53	51.99	78 996	44.250	12.682	40 01
Hydrogen	7.5	6.87	7.156	7 57	7 25	7.07	7.03	6 69	6.72	11.700	6 674	6.374	6.73
Nitrogen	13.9	15 66	15.672	15 01	15.07	18 72	17.71	17.94	17.28	—	—	—	—
Oxygen	24 4	22.48	23 034	21.37	21.30	23.22	24.61	23.84	24.01	9.304	49.076	50.944	53.27

The composition of bones is nearly identical with that of skin, &c.

One of the most common practical errors which we meet with, in the care of animals, is the total absence of, or insufficient shelter allowed to them. It is an error, because it involves a waste of food. This will be seen when we consider what *respiration* implies, and the effects which it produces.

In respiration, or the act of breathing, the animal inhales and exhales the atmospheric air. The air drawn in, or inhaled, if dry, consists nearly of

Nitrogen	79.16
Oxygen	20.80
Carbonic acid	0.04
	100.

After the air has passed through the lungs, it then consists of

Nitrogen	79.16
Oxygen	16.84 to 12
Carbonic acid	4.00 to 8
	100.

The amount of carbonic acid, therefore, is much greater after the air has passed through the lungs than what it was when first inhaled. "On an average, the natural proportion of carbonic acid in the air is found to be increased one hundred times after it is expelled by breathing from the lungs."—(Johnston.) Whence, then, is this excess of carbon derived? It must evidently be from some other source than the atmospheric air.

Carbonic acid is formed by the union of carbon and oxygen, in the proportion of one part of the former with two parts of the latter. Water is a compound of eight parts of oxygen and one part of hydrogen. Starch, gum, and sugar, therefore, consist almost wholly of carbon and water. The oxygen of the air inhaled, combining with the carbon contained in the starch and sugar existing in the food of the animal, produces carbonic acid, which is expelled from the lungs in breathing; and the union of the oxygen with the hydrogen of the food, in like manner, produces water, the excess of which passes off in the urine, in a vapour exhaled in respiration, which is visible at a low temperature, and in the perspiration. The reason is evident, therefore, why the amount of carbonic acid in the air is so much greater after it has passed through the lungs than what it was previous to being inhaled.

But this consumption of carbon in the process of respiration is precisely similar to what takes place in combustion. A union takes place of the carbon and oxygen of the substance which is being burnt, and their dispersion is accompanied by the production of heat. From the consumption of carbon, therefore, which takes place in respiration, heat is evolved and diffused throughout the body, and thus the starch, gum, and sugar of the food produces that degree of temperature which is necessary for the life of the animal. When, therefore, the animal is exposed to a lower temperature than the natural heat of the body, a larger quantity of the elements of respiration are required to maintain the necessary degree of heat; and hence, animals which are exposed consume more food with less profitable results in the production of fat than those which are kept in a temperature at least not less than the natural heat of the body. In the former case, owing to the deficient supply of the elements of respiration, caused by an insufficiency of suitable food, or their more rapid consumption or dispersion in consequence of the coldness or low temperature of the surrounding atmosphere, there is no excess of these elements—nothing to spare towards the production of fat, and if the substance of the animal does not actually waste from the strong combustion which is going on in the system, it at least remains stationary. Warmth, therefore, is equivalent to an increase of food, inasmuch as it prevents unnecessary waste of the elements of respiration and fat.

To those who have always been accustomed to the sleek, fine coats of carefully-tended cattle, the shaggy winter covering of the Kyloe appears grotesque, and more ornamental than useful; but they overlook the fact that this shaggy covering is an economiser of food, and that by means of the additional warmth which it affords, the scanty food which the Kyloe procures during winter in its natural state, and which would be insufficient of itself to sustain the animal—that is, to evolve a sufficient amount of heat to enable the animal to undergo the rigour of the winter—becomes equal to the purpose, in consequence of this covering. There is a less demand on the combustible materials stored up in the food, and thus the shaggy covering becomes essential to the existence of the animal.

Insufficient house accommodation is a serious loss to the owner of cattle, entailing as it does an extra expenditure of food without an equivalent return; but how much greater is the loss in the case of those whose cattle are exposed during the entire winter without any shelter beyond that which is afforded by a hedge! When we see cattle on a cold winter's day

> "Mourn in corners where the fence
> Screens them, and seem half petrified to sleep
> In unrecumbent sadness,"

we see a waste of material going on, which is nearly as absurd as if the owner would wilfully undertake the office of the incendiary, and set fire to his hay-ricks. All cattle ought to be put, on the approach of winter, either into properly-constructed houses or *covered* yards, where their food will be expended in promoting their growth and development, and not wasted in meeting the extra demand for animal-heat-producing material which exposure creates.

But there is in the construction of cattle accommodation one important essential to be attended to, namely, perfect ventilation, combined with an entire absence of cold currents of air.

We have alluded to the change which takes place after the air has passed through the lungs, by which the amount of carbonic acid becomes greater than when first inhaled. If there is no means of escape provided, the carbonic acid will accumulate to such an extent as to be must prejudicial to the animals, breathing an atmosphere which is saturated with it. It is, in fact, a deadly poison; and when we bear this in mind, we can have little difficulty in tracing to their true source many of those inflammatory diseases to which cattle confined in ill-ventilated houses are subject, and the origin of which often appears so very mysterious. A man consumes about a gallon of air per minute. "A horse," according to Boussingault, "throws off daily forty-five pounds of carbon in the form of carbonic acid gas; and in the case of the cow, four-ninths of the carbon contained in the daily food is consumed during the process of respiration." (Voelcker.) This shows us how very soon the air in a closely shut-up stable or cow-house becomes vitiated, and rendered utterly unfit to support life in a healthy state. If, therefore, it is necessary to prevent unnecessary waste of food by providing proper shelter, it is no less requisite to the healthy condition of the animals that the air which they breathe shall always be kept in a state of purity. Ample space should be secured over the heads of the animals, and hay-lofts and other obstructions to a free circulation of air ought never to be permitted. Ventilators should be inserted in the apex of the roof to permit the heated exhaled air to escape, and means taken to secure a constant supply of fresh air from beneath, without creating a thorough draft, the effect of which would be to check the perspiration, and thus lay the foundation for catarrh and other diseases.

The exercise which an animal takes causes a corresponding amount of waste of food. By exercise the respirations are not only rendered more frequent, but are also increased in force; hence there is a greater consumption of carbon—that is, of starch and sugar, the elements of respiration and fat—and, consequently, the animal requires a larger amount of food to enable it to fatten; or if this is withheld, it becomes wasted or leaner. It is well known that fattening animals become more rapidly fat when kept perfectly quiet, and free from everything which excites their attention and renders them restless. The growing animal, indeed, requires a certain amount of exercise in order to promote muscular development and strength of constitution. If sufficient exercise is prevented in this case, the young animal will no doubt accumulate fat freely, but his constitution will be enfeebled; and if the same treatment is pursued through several successive generations, whilst the animals will gradually acquire a greater aptitude to fatten at an early age, they will also become less to be relied upon for breeding purposes. Growing and breeding animals should, therefore, be always permitted a sufficient amount of exercise to secure a healthy system, whilst those which are fattening for the butcher must be kept quiet and undisturbed.

We have observed that there must be a proper mixture of the flesh-forming elements along with those of respiration and fat, to form perfect food. We find this mixture to be particularly the case in milk, the first description of food upon which the young animal subsists. It contains, 1st, casein or curd, which is precisely the same as the *fibrin* or lean part of the flesh; 2nd, fat in the shape of butter; 3rd, sugar, which is required in the process of respiration; and 4th, certain substances which are converted into the earthy part of the bones and the saline matter of the blood. The saline or earthy portion of milk consists of the phosphates of lime, magnesia, and iron, chloride of potassium, and common salt. In its ordinary state the milk of the cow consists of about 4½ per cent. of casein or flesh-forming matter; 3 per cent. of butter, oil, or fat; 5 per cent. of sugar; ½ per cent. of saline matter; and 87 per cent of water. Everything, therefore, which is required to promote the development of the growing animal is contained in the milk, blended together in proportions suited for the purpose. We snow proceed to give in detail the composition of the various articles employed as the food of animals, the practical bearings of which will be afterwards illustrated.

The average composition of beans, peas, tares, and lentils so closely approximate to each other, that it is needless giving their constituents in separate detail. From the following analytical statement of the composition of field beans we learn the value of this class of feeding stuffs:—

Nitrogenised or flesh-forming constituents	23·3
Non-nitrogenous substances, being the elements of respiration and fat—	
1. Starch, sugar, fat, &c.	48·5
2. Woody fibre	10 0
Ash (bone materials)	3·4
Water	14·8
	100·0

The amount of oil, or ready-prepared fat, contained in beans, &c., is small compared with other feeding stuffs, being only about 2 per cent.

The amount of nutritious matter yielded by the produce of an acre (statute) of beans, taking the crop at thirty bushels, is as follows:—

	lbs. per acre.
Nitrogenous or flesh-forming matter ..	460
Elements of fat and respiration—	
Starch, sugar, fat, &c.	970
Woody fibre	198
Mineral matter (bone materials, &c.) ..	67
Water	285
	1980

The straw of beans and peas is also rich in flesh and fat-forming constituents. For example:—

	Bean Straw.	Pea Straw.
Flesh-forming matters	8.25	12.55
Non-nitrogenized substances	65 85	69.45
Mineral matters, bone materials, &c	6.67	6.00
Water......................	19.23	12.00

We shall afterward see that bean and pea straw contains a much larger proportion of nitrogenous matter, the elements of nutrition or flesh-forming substance, than the straw of any of the cereals.

Although wheat flour is never used as the food of domestic animals, we shall refer to its composition, chiefly for the purpose of comparison with other articles. Wheat flour, therefore, consists of

Flesh-forming substances (*gluten and albumen*)		14.6
Elements of respiration and fat, &c.:—		
Starch	59.7	
Gum and sugar	7.2	
Oil	1.2	
Woody fibre	1.7	
	—	69.8
Ash		1.6
Water		14.0
		100.0

Bran is richer than flour in oil or fat, containing 5½ per cent., whilst flour only contains from 1 to 2 per cent. The flesh-forming constituents of bran are also nearly equal to those in flour.

Wheat straw contains—

Flesh-forming substances ..	1.79
Respiratory and fatty matters	31.06
Woody fibre	45.45
Ash	7.47
Water	14.23
	100.00

Barley, in its natural state, is seldom used in feeding animals; but when ground into meal, or boiled and given in connection with other feeding stuffs, it is a valuable, and, in several parts of the country, a rather extensively used article of food. The amount of oil contained in barley is very small, being only about one-half per cent., whilst the entire amount of non-nitrogenous matters, fitted for the support of respiration and the production of fat, is about 69½ per cent., of which starch, gum, and sugar form 55 per cent. An average crop of barley—say 36 bushels, or 1,872 lbs. per statute acre—will yield 243½ lbs. of flesh-forming or nitrogenous matter in the grain, and 62 lbs. in the straw; 1,301 lbs. of the elements of respiration and fat in the grain, and 2,987 lbs. in the straw; 65½ lbs. of inorganic matter, or ash, in the grain, and 191 lbs. in the straw; and 262 lbs. of water in the grain, and 398 lbs. in the straw. At one time it was considered that by the conversion of barley into malt it became more valuable as an article of food for animals, but this opinion has been proved to be wrong, and it has been found that by simply steeping the barley from thirty to forty hours, it becomes a more valuable article of cattle diet than either malt or dry barley. Brewers' grains, and distillery refuse, or the liquid which remains after the spirit has been drawn off, are much used as cattle food, especially by dairymen. These are rich in phosphates, which produce milk. The proportion of water is of course large, being about 76 per cent. in the grains, whilst the organic part amounts to 23 per cent. The thin part of the liquid is about half the nutritive value of its weight of ordinary turnips; and the thicker, or sedimentary portion, is fully equal to its weight of the average composition of turnips.

Oats are more extensively used than any of the other cereals as an article of cattle-food. The composition of this grain shows that it contains a large amount of the flesh or muscle-forming substances, and also 6 per cent. of oil. Consequently, its value for feeding purposes is easily understood. The nutritive value of oats, however, is by no means regular, some varieties being one-third more nutritious than other kinds. Taking the average composition, we find that oats in the natural state contain 13 per cent. of nitrogenised or flesh-forming principles; 69 per cent. of substances which support respiration and produce fat; 3 per cent. of inorganic matter, bone earth, &c.; and 12 per cent. of water. The analyses of ripe oat-straw do not show any material difference from the straw of the cereals, but when not fully ripe the per-centage of nitrogenised or flesh-forming constituents has been ascertained by Dr. Voelcker to be much greater than in the fully ripened straw, which explains the value of oat-straw as fodder when cut whilst partially green. A similar result was observed in analyzing ripe oats and oats cut green. Oats ought always to be bruised before being given to animals, as in this state the food is not only more thoroughly masticated, but is also much less liable to produce inflammation, which we often find to arise from the over liberal or inconsiderate use of the whole grain. In the form of meal it is but seldom used as cattle food; but when ground into meal, the more thoroughly it is sifted the more nutritious it becomes. This is the reverse of what occurs in the case of flour, because a large proportion of the flesh-forming and fat-producing substances contained in wheat is removed in the bran. Fine oatmeal contains nearly double the amount of nitrogenised matter found in fine flour; the proportion in the former being from 15 to 17 per cent, whilst in the latter it amounts to from 9 to 10 per cent. The use of oatmeal is, therefore, more favourable to the production of muscle than flour.

Rye is generally used as cattle food in this country in a green state. It resembles wheat in its composition more than either of the other cereals, and is inferior to barley for feeding purposes. It only contains about one per cent. of oil or fatty matter; 60 per cent. of starch and sugar; 14 per cent. of flesh-forming substances; 10¼ per cent. of husk or woody fibre; 1¾ per cent. of ash; and 13 per cent. of water.

Although Indian corn is not grown in the British islands, its use for feeding purposes has become much extended of late years. It contains a larger per-centage of oil than oats—being as much as 8 to 9 per cent., and is, therefore, a valuable auxiliary in the fattening of our domestic animals. The flesh-forming constituents of Indian corn amount to 11¼ per cent.; the heat and fat-producing substances to 67½ per cent.; woody fibre, 5 per cent.; ash, 1¼ per cent.; and water, 15 per cent.

Turnips.—The nutritive value of turnips varies with the variety, the climate, the soil, and the manure used in their cultivation, and, therefore, any arrangement of their flesh-forming and fat-forming elements can only be an approximation to the truth, even in the same kind of turnips if grown under different circumstances. All the varieties contain a large per-centage of water—namely, from 86 to 94 per cent.—and from 6 to 14 per cent. of dry solid matter. Taking the average composition, the latter may be stated as follows:—

Swedes, in the natural state, 89.260 per cent. of water; 1·443 per cent. of nitrogenised or flesh-producing substances; 8·474 per cent. of non-nitrogenised matters, the elements of respiration and fat; and 0·623 per cent. of ash. The ash of all turnips is chiefly made up of potash, soda, common salt, lime, phosphoric and sulphuric acids. Aberdeen Yellows, in the natural state, contain 90·578 per cent. of water; 1·802 per cent. of flesh-forming matters; 6·971 of the elements of respiration and fat; and 0.649 of ash. From the great variation in the composition of turnips, it is desirable that further investigations should be made by scientific men, in connection with the practical experiments of the feeder, and by those means some dark points relative to the nutritive properties of turnips would be elucidated, and the practical man guided more clearly than he is at present.

Mangel Wurzel.—The average composition of this variety of roots contains, in the natural state, 1·81 per cent. of flesh-forming substances; 11·19 per cent. of the elements of respiration and fat; 0·96 per cent. of ash—of which the largest ingredients are potash, soda, and common salt—and 86·04 per cent. of water. The orange globe variety has been found to contain a larger amount of the elements of respiration and fat than the long red, which agrees with the practical results obtained by the use of those varieties in feeding. The tendency of fresh mangels to produce scour when given to cattle is well known to all who have used them, and also the fact that when the roots are kept over for some months before being given to cattle this scouring property disappears. It arises from a certain acrid substance which exists in the fresh root, the nature of which has not yet been clearly ascertained, but which gradually disappears after the roots have been raised and stored. The quantity of sugar contained in mangels which have been kept for some months is greater than in the fresh roots, for which cause also cattle thrive better on old roots than on those which have been recently drawn from the soil. The old roots become riper and sweeter, in the same manner as the apple or any other fruit becomes sweeter as it approaches maturity. Dr. Voelcker states that he has found mangels "to be about the worst description of roots that can be given to sheep." In an experimental trial of different feeding materials, he found that whilst "sheep fed on swedes and hay increased on an average 2½ lbs. per week," those fed on mangels and hay "at the end of four months had not increased a single pound." From this he infers that there exists some peculiarity in the constitution of sheep which prevents them from deriving benefit from mangels, whilst cattle thrive rapidly upon them. This is another point which requires co-operative investigation on the part of scientific and practical men.

Carrots.—The white Belgian variety has been analyzed by Dr. Voelcker, who found it to contain, in its natural state, 87·338 per cent. of water; 0·667 per cent. of flesh-forming or nitrogenised substances; 11·250 per cent. of non-nitrogenised matters capable of supporting animal heat and the formation of fat; and 0·745 per cent. of ash. Dr. Voelcker's analysis shows that the carrot does not contain any appreciable quantity of starch, but this want is counterbalanced by the existence of 6·544 per cent. of sugar. The amount of solid matter in the carrot is fully 12 per cent. The largest portion of the ash consists of potash, soda, common salt, lime, phosphoric and sulphuric acid.

Parsnips contain starch, which does not exist in carrots, to the amount, according to Voelcker, of 3·507 per cent.; but the quantity of sugar is less than in the carrot, being only 2·882 per cent.

It is a curious fact that the starch contained in parsnips exists only in the external layers of the root, no starch whatever being contained in the heart. The general composition of parsnips in their natural state may be represented as follows: 82·050 per cent. of water; flesh-producing substances, 1·280 per cent.; heat and fat-forming substances, 15·738 per cent.; ash, 0·932 per cent. The amount of solid matter in the parsnip is from 18 to 20 per cent. The composition of the ash of parsnips very closely resembles that of carrots. The proportion of ready-formed fat found in parsnips is twice as much as in carrots: compared with turnips, it will be seen that the amount of solid matter in parsnips is about twice as much as in turnips, "and, consequently, a ton of parsnips ought to go as far, as a fattening material, as two tons of white turnips." (Voelcker.)

Potatoes are extremely variable in their composition, differing not only in the numerous varieties, but the same variety grown under different circumstances will also give very different results upon being subjected to analyzation. Practical men are not agreed as to the feeding value of potatoes; and from the variation in their composition, it is easy to understand how such diversity of opinion should exist. Of course, we can only give in general terms what appears to be the average composition of potatoes, indicating their value as feeding materials. The proportion of water found in the potato varies from 68 to as high as 80 per cent.; of starch, from 10 to 20 per cent.; of fatty matters, from 0·10 to 0·42 per cent.; and of flesh-forming materials—which are always found in the largest proportion in newly dug potatoes—from 1 to 2¼ per cent., 2 per cent. being about the usual average. It may be remarked that it is the flesh-forming constituents of the potato which disease attacks, converting these into ammonia, and hence the offensive smell which diseased potatoes emit. The starch is left untouched, and thus the diseased roots, although unfit to be converted into flesh, are still valuable for the manufacture of starch, as we find them employed at the starch mills. The proportion of sugar in the potato is usually between 3 and 4 per cent. The several constituents in the natural state may be classified as follows:—Flesh-forming matters, 2·3 per cent.; non-nitrogenous matter supporting animal heat, and producing fat, 21.7 per cent.; ash, 1 per cent.; water, 75 per cent. Average pottaoes should, therefore, contain one-fourth of solid matter, or 25 per cent.—a much larger proportion than any of the other roots.

Linseed.—Whether we look to the value of the fibre of the flax plant as an article of immense importance in our textile manufactures, or that of its seed as an oil-producing and a fattening substance, we must conclude that it occupies a most important place in the list of plants which come within the province of the British agriculturist. From the important nature of the linen manufacture in Ireland, the chief object in view has been the production of a fine class of fibre, an object which is incompatible with the production of a large crop of seed; and hence, perhaps, we find that flax cultivation has hitherto been chiefly confined to those districts where a ready market existed for the sale of the fibre. If the value of the seed as a fattening material were inculcated more strongly than it has usually been by those who advocate the extension of flax cultivation, it is probable that flax-growing would be more extensively introduced throughout the kingdom than it is; and any such extension for the purpose of seed-growing would soon be followed by the introduction of machinery for the preparation of the fibre, and a ready market for it when so prepared.

As an element in the meat manufacture, whether in the building up and development of the young and growing animal, or the enriching of the produce of the dairy cow, or the final preparation of the animal for the butcher, linseed is an article of the highest importance to the agriculturist. By its aid he is materially assisted in his operations, and without it he is often working under a disadvantage. It assists in increasing the nutritive powers of other substances, and imparts to them a value which they do not possess of themselves.

Linseed contains 34 per cent. of oil, or ready prepared fat; 24·44 of flesh-forming constituents; 30·73 per cent. of heat-producing principles; 3.33 of ash, being chiefly phosphates or bone materials; and 7½ per cent. of water. The amount of fat and flesh-producing elements in linseed is thus very large, which shows its adaption for young stock as well as for fattening animals. For the latter description, the immense quantity of ready prepared fat found in it at once points it out as the most valuable agent in the meat manufacture which we possess.

Oil cakesare the refuse of linseed, rapeseed, and other oily seeds, after being subjected to pressure, for the purpose of extracting the oil contained in them. Although a considerable quantity of oil is expressed, still a large proportion is left in the refuse or cake. English-made linseed cakes are considered superior to those of foreign make, which arises from the less degree of heat employed in extracting the oil in the English mills, from the greater care which is taken in the manufacture, and from the greater amount of oil contained in it. English oil-cake is also generally fresher than foreign, a circumstance of great importance. The average composition of linseed oil-cake shows that it contains 12·79 per cent. of oil; 27·28 per cent. of flesh-forming principles; 41·36 per cent. of heat-producing constituents; 6·13 per cent. of ash (phosphates); and 12·44 per cent. of moisture. Good linseed cakes contain, therefore, about the same amount of flesh-forming principles as beans and peas; but in the production of fat, linseed cakes are superior to beans, peas, Indian corn, or any of the other kinds of food.

Rape Cakes.—Until lately, rape cake, or rape dust, was chiefly used as a manure. It has, however, been ascertained that, although not generally relished by cattle on account of its tendency to rancidity, it is liked by sheep. If rape cake is mixed with *boiling* water for some time before being used, it may be given safely either to cattle or sheep, and the former will relish it better than in its natural state. Rape cake contains 10.68 per cent. of moisture; 11.10 per cent. of oil; 29.53 per cent. of flesh-forming constituents; 40.90 per cent. of heat-producing elements; and 7.79 per cent. of ash, or bone materials. An examination of the relative proportions of these constituents will show the value of rape cake as a feeding material, the greatest drawback against its use being the readiness with which the oil contained in it becomes rancid, thereby rendering it less palatable to stock. Rape cake is often adulterated with mustard cake, to which it bears a resemblance; and this adulteration renders it not only of less value, but positively dangerous to those animals that may eat it. Cases have often occurred of mustard cake being substituted for rape cake, and death ensuing from the use of it. The following tests, given by Dr. Voelcker, will be found of great value to the purchasers of oil cakes:—

1. Examine a bit of the cake as to its taste and smell; observe that it is fresh and free from any mouldiness.

2. Examine another piece with a common pocket lens. This examination will show whether the cake is a linseed or a rape-cake, inasmuch as the forms of the linseed and rape seed are widely different. Much more difficult is it to distinguish by the lens mustard from rape-cake.

3. Mix in a tumbler about one ounce of the cake broken into small pieces, with six ounces of cold water. Good linseed-cake will form under these circumstances a stiff agreeably-tasting jelly, without separating any water. Rape-cake will become less gelatinous, and separate a yellowish or brown rather bitter tasting liquid. Mustard-cake, likewise, will become a little gelatinous, and separate a brown liquid which possesses the characteristic taste and smell of essential oil of mustard. Rape-cake, fraudulently or naturally mixed with mustard-seed, under these circumstances will exhibit a similar behaviour to that of mustard cake, and by the degree of pungency of taste and smell, when compared with pure mustard-cake, will afford the means of estimating approximately the amount of mustard which the cake contains.

We have now arrived at an important and interesting branch of our subject, namely, the amount of nutrition contained in the different varieties of grasses. Until recently, our knowledge of the nutritive qualities of the grasses was imperfect, and based chiefly on speculative opinions rather than ascertained facts. But we have now to thank Professors Way, Anderson, and Voelcker for having investigated the subject, at least to a certain extent; and although there still remains in this respect a wide field for the exercise of "the detective functions" of analytical chemistry, still we have clearer *data* to guide us, in the results of the analyses conducted by the eminent men we have named.

There are many causes which influence the nutritive value of hay, and even of the grasses in a fresh state. The period at which the grasses are cut, whether before flowering, when in flower, or when dead ripe, influences the nutritive qualities to a very considerable extent. Thus, of two samples of red clover, one of which was cut when beginning to flower, and the second in fourteen days after, when in full flower, the latter contained nearly 10 per cent. less of nutritive substances and 11 per cent. more indigestible woody fibre than the former. This proves to us that the longer that clover is allowed to remain uncut, after it is in flower, its nutritive properties become rapidly deteriorated, the starch and other elements of respiration and fat becoming changed into woody fibre. Again, exposure to continued rain lessens the nutritive value of hay, inasmuch as the juices are thereby washed out, and it is only the insoluble constituents which remain. Heating or fermentation also acts injuriously, because by means of it the nitrogenised part, or the flesh-forming constituents, are not only rendered less soluble, but, if the fermentation is allowed to proceed to a considerable extent, these become destroyed—are changed, in fact, into other compounds, amongst which are vinegar and ammonia. Grasses also, when grown on different descriptions of soils, will often present very opposite results, when their nutritive qualities are tested by analysis. Thus the analyses of dry clovers grown in Scotland, made by Dr. Anderson, showed an average amount of flesh-forming substances to be 14.40 per cent.; whilst Drs. Voelcker and Way, on clovers grown in England, showed an average by the former chemist of 19.44 per cent., and by the latter of 19.31 per cent., being five per cent. greater than the results of Dr. Anderson's analyses. There must, therefore, have been certain causes which influenced the manner in which the nutritive substance of the different clovers were accumulated in the plants—causes which were, perhaps, chiefly derivable from the peculiarities of the soil in which the different clovers were grown.

Taking Dr. Voelcker's analysis as our guide, we find that in the natural state red clover contains 80.640 per cent. of water, 3·606 per cent. of flesh-forming substances, 13.784 per cent. of heat and fat-producing substances, and 1.970 per cent. of inorganic matters or ash. Alsike clover contained in the natural state 76·670 per cent. of water, 4.825 per cent. of flesh-forming matters, 16.445 heat and fat-producing substances, and 2.060 per cent. of ash. Lucerne contained 73.41 per cent. of water, 4.40 per cent. of flesh-forming matters, 19.11 per cent. of heat and fat-producing substances, and 3.08 per cent. of ash. Dr. Anderson states the composition of clover-hay to be as follows:—Moisture, 16.84 per cent.; flesh-forming substances, 13.52 per cent.; non-nitrogenised matters—the elements of respiration and fat—64.43 per cent.; mineral matters or ash, 5.51 per cent. Dr. Voelcker gives the mean of 25 analyses of common meadow hay, which shows that, on an average, this description of food contains 14.61 per cent. of water, 8.44 per cent. of flesh-forming constituents, 43.63 per cent. of the elements of respiration and fat, 27.16 per cent. of woody fibre, and 6.16 per cent. of ash. Meadow hay of superior quality, analyzed by Dr. Wolff, contained 10.69 per cent. of flesh-forming matters; whilst inferior meadow-hay analyzed by Dr. Anderson, contained, when fresh, 6.16 per cent., and after being kept for a year, only four per cent. of the same substances.

If we take some of the ordinary grasses when made into hay, and assuming, which is the fact, that hay on an average contains 14.3 per cent. of water, we find that the composition of Italian rye-grass consists of 8.66 per cent. of flesh-forming substances, 52.36 of the elements of respiration and fat, 16.94 per cent. of woody fibre, and 7.66 per cent. of inorganic matter or ash. Perennial rye-grass contains 10.16 per cent. of flesh-forming matters, 38.93 per cent. of heat and fat-producing substances, 30.17 per cent. of woody fibre, and 6.46 per cent. of ash. Italian rye-grass is, therefore, more valuable than perennial rye-grass. Timothy, or meadow cat's-tail grass, contains 9.74 per cent. of flesh-forming matters, 48.77 per cent. of heat and fat-producing substances, 22.68 per cent. of woody fibre, and 4.53 per cent. of ash. The composition of timothy also shows it to be a valuable grass. *Holcus lanatus*, soft meadow grass, contains 9.87 per cent. of flesh-forming substances, 36.69 per cent. of heat and fat-producing matters, 33.69 per cent. of woody fibre, and 5.46 per cent. of ash. This grass is of inferior value. The hay of grass grown on watered meadows is very nutritious, more so than that produced on land which has not been irrigated. It contains 22.21 per cent. of flesh-forming matters, 5.60 per cent. of ready-formed fat (whereas the highest proportion in the grasses we have already named is 3.04 per cent.), 27.47 per cent. of respiratory principles, 21.55 per cent. of woody fibre, and 9.03 per cent. of ash. Dr. Voelcker accounts for this superiority of these grasses by supposing that it is partly due to the disappearance of inferior grasses from irrigated meadows, and "perhaps also to the circumstance that the grass on such meadows is always cut earlier than on ordinary meadows."

Whatever defects exists in our knowledge of the composition of the various grasses, there is one well-ascertained fact, namely, that if we wish to possess the largest possible amount of nutritious matters in our hay, whether clover or meadow hay, we must cut the grasses early—that is, not later than when beginning to flower; because that with every day which passes after the grasses have reached that particular stage, there is a loss in the amount of their nutritive principles, until at last we find, on their becoming fully ripe, they are only one-half the value they were when beginning to flower. In order to see that this fact is either unknown to, or unheeded by farmers in general, we have only to look at any of our hay fields in the month of July, when it will be seen that the largest proportion of the grasses are allowed to remain uncut until their nutritive qualities have become wasted, or converted into indigestible matter. It is in such points as this that we learn to appreciate the value of scientific research when brought to bear upon the practice of agriculture; when the mere practical man, hesitating between two opinions, and uncertain which course he ought to adopt, finds a sudden and a bright light thrown upon his course by the minute investigations of the scientific explorer. If we argue upon or support our arguments by mere generalities, we shall invariably find ourselves disappointed in our expectations of impressing our views, however correct they may be, on the minds of those whom we are desirous of influencing; but once show them proof of the correctness of the views expressed, and conviction is at once driven home with irresistible force. This is the manner, indeed, in which the union of "practice with science" takes place. Practice states the *fact*, and science demonstrates the reasons which constitute it A FACT. Unite them and they are irresistible; separate them, and the course of each is wavering, uncertain, and liable to error.—Irish Farmers' Gazette.

THE HISTORY OF PRICES—FURTHER CONSIDERED.

We resume our observations on Mr. Tooke's "History of Prices." Part 2nd, vol. v. contains 13 sections, "On the general course of trade in the manufacturing and other markets during the nine years 1848 to 1856." These refer to the influence of political events, and railway expenditure, in 1848; state of credit in 1849; prices of raw materials, and rise in price of silver and produce, in 1850; fall of prices of produce, and effects of Hyde Park Exhibition, in 1851; effects of Australian trade in 1852; rise in rate of discount, movement for higher wages, the Preston strike, and general review of trade, in 1853; effects of the war, and influence of the influx of gold, in 1854; review of the influence of the war, 1854-55; return of peace, 1856, and comparative prices in 1854, '55 and '56. The last section gives a summary of the conclusions arrived at by the author, "with reference to the prices of commodities and state of trade, 1848-56," to this we must confine our remarks.

The course of prices on imported articles, during these nine years, is summed up as follows:—That during 1848 and 1849 the tendency was towards a decline in prices; but in 1850 a real or apprehended failure of supply caused a reaction, which in 1851 again yielded before an excess of supply; that in 1852 symptoms of a revulsion appeared, fully realized in 1853 by a great advance, which continued until towards the close of the year; from thence, to that of 1854, another reaction took place, whilst in 1855 and 1856 there was a quiet fixity of price, disturbed only by such fluctuations as commonly arise from the influence of demand and supply.

The effects of the gold discoveries in California were first felt in this country in 1850, and continued to accumulate the three following years, by an increasing demand for British and foreign goods in the United States. This had so greatly increased in 1853, that it completely counteracted the effect of the large importation of foreign corn, consequent on the partial failure of the harvest in this country that season. This demand continued through the three following years, only slightly interrupted by the failures in the United States and California, and the consequent diminution of confidence and credit. This great additional consumption of our manufactured and colonial produce has occasioned a constant and large transmission of the precious metals from America to the United Kingdom.

This effect of the Californian discoveries was greatly heightened in 1851, by the (to us at least) more important discovery of the gold deposits in Australia, which both turned the stream of emigration in that direction, and caused an enormous expansion of the commerce with those colonies. This created a demand for shipping, unprecedented in the history of commercial marine, and an increased rate of freight, and of wages, both for shipbuilders and for seamen. The demand for Australia caused such a rush of trade to that quarter, that the market became glutted in 1854 and 1855, and prices, which had for the three previous years been enormously high, fell even below par for a short time. Still, such was the reactive energy of the commerce of that colony, that a single season sufficed to restore the balance, and in 1856 trade resumed its ordinary activity, although prices were more moderate than before the decline.

Mr. Tooke repudiates the idea that the fluctuations in prices, the course of trade, or the increased demand for goods for export to America and Australia, had any influence upon or connection with changes in the amount of the aggregate outstanding circulation of bank-notes, the fluctuations in which were determined by the consequences of previous application of capital and credit. That, in fact, the fluctuations in price of the most important kind, and in the largest markets of the country, took place "either without such changes in the bank-note circulation, or at the same time with the occurrence of a change the opposite of that which, on the grounds on which the currency theory is built, would have been expected to precede or accompany the particular alteration in the markets." Equally does Mr. Tooke deny any connection or coincidence between the rate of interest and the variations in the produce markets, in relation to cause and effect. The accumulation of gold in the Bank of England in 1852 and 1853 was occasioned by the excessively low rate of interest and discount, the first effect of the gold discoveries on our finances; and the rise of the rate of discount in January, 1853, and subsequently, was caused by extended demands for capital, for the purpose of new, distant, and costly enterprises, both public and private, and this absorption of capital increases with every year.

The slight interruption to our trade by the Russian war is ascribed to four causes—namely, the remoteness of the theatre of war; the want of a navy on the part of Russia; the continued supply of Russian produce by neutral ports, or their substitution by imports from India, &c.; and, lastly, by the influence of the electric telegraph and steam navigation, and the enormous resources of our mercantile marine and postal services, by which "operations are accomplished in a few weeks which, fifty years ago, would have occupied a long series of months." But the most powerful cause was the continued influx of gold, and its effect in averting—both from this country and from France—the extreme financial pressure and peril, which, in the absence of that influx, must have been produced by the large remittances of gold to the seat of war, rendering nugatory the Bank Charter restrictions of 1844, and even endangered the maintenance of the Act of 1819.

Whilst the losses of the middle classes in 1848 and 1849, by railway investments and speculations, limited the consumption of commodities on the one hand, the distributionof the money so lost amongst the working classes acted as a compensating balance; the latter being thereby enabled to command a larger share of the necessaries and comforts of life than at any previous period during the present century.

The three grand causes comprised in the above summary, before which all others sink into insignificance, are the railway system, the gold discoveries, and the increased facilities of inter-communication between distant countries by steam navigation and the electric telegraph.

With regard to the first of these causes, notwithstanding the enormous losses sustained by the middle class, thousands being involved in ruin, the consequences, so far as trade was concerned, were largely alleviated and counterbalanced by the more extensive distribution of the money so lost amongst the operative classes, who were thereby enabled to purchase more of the necessaries and comforts of life than at any former period. However severe, therefore, the losses were to individuals, the money was not lost either to the nation or to commerce. In this respect, the railway speculation of 1848-50 was very different and far less injurious to the country than the foreign mining speculations which preceded and so greatly accelerated the panic of 1825. In that case, millions were wholly lost both to individuals and to the country, and the consequences were felt for many years after, by the commerce of the country. The railway speculation, on the contrary, only caused capital to change hands; and instead of being locked up in securities barren of commercial profits, became diffused throughout the country in hands that always make the best commercial use of it, by expending it in the necessaries of life. And besides, the objects of speculation, the railways, still remained as national property; although the original shareholders no longer possessed an interest in them, the new holders, who had purchased them at reduced prices, find them available property, whilst the country at large is benefited both by the outlay of the money and from the facilities created by their establishment. The nation therefore, we repeat, sustained no loss, either in its wealth or commerce, by the railway speculations, the whole of the property lost by individuals being still retained in the country, more widely diffused and more freely circulated.

Of the gold discoveries we shall have occasion to speak at large, when we come to the consideration of part 7 and appendix 22 to 33.

With regard to the third cause, there is no doubt of its effect upon prices wherever their operatic influence extends. By steam navigation the produce of our country is conveyed to another in much less than one-half the time required in former days by sailing vessels, and thus the wants of a country are supplied in a proportionately diminished space of time. On the other hand, the electric telegraph will tend more than ever, or than any other cause, to produce equality of prices, by the instantaneous communication from one country to another of the state of, and changes in, the markets. Thus, when the Atlantic telegraph cable is laid down and completed between London and New York, the corn-merchant at Mark Lane market will be able by the help of the telegraph-office, already prepared in the market, to learn, during the business hours, the actual price of corn or flour in America at the instant;* and, *vice versâ*, the same with the merchant at New York. Such a means of information cannot fail, wherever it is established, of producing an instantaneous influence upon prices, and will inevitably tend eventually to as perfect an equalization of price, allowing for the cost of transit and other expenses of commerce.

Part 3 contains 13 sections on "The progress of railway construction in the United Kingdom and in foreign countries, from the year 1843 to the present time; on the effects of the great railway expenditure of 1845-50; and on the operation of railway transit on the supply and consumption, and therefore on the prices, of commodities."

The gross expenditure on railways up to the close of 1855, in the United Kingdom, amounted in round numbers to 300 millions sterling; fully half of which was incurred in the five years from 1846 to 1850 inclusive. And of the 8,300 miles of railway open and at work at the close of 1855, fully one-half were completed and brought into operation for the first time during those five years. The traffic receipts have already exceeded 22 millions sterling per year.

In looking over the sections of this part, we have been forcibly struck with the proofs adduced of the immense advantages that have accrued to this, as well as other countries, from the establishment of the railway system. Whether we look at the vast number of hands employed permanently—equal to all the hands employed in all the factories of this kingdom—the facilities afforded to the people, either for the pursuit of business or pleasure—the saving of time, labour, and capital to the country tradesmen throughout the kingdom—the general convenience afforded for the enjoyment of personal intercourse with distant friends—or the universal happiness diffused by the increased and cheap acquisition of postal communication—the railway system may be viewed as one of the greatest boons to the nation. Whatever losses may have been sustained by shareholders through the mismanagement or dishonesty of projectors or directors, we may look forward with certainty to a period, not far distant, when ample remuneration on every principal line in the kingdom will make amends to the nation for the fiery ordeal through which the system has led it.

Part 4 embraces 21 sections on the subject of "Free-trade principles, and their progressive application to the commercial legislation of this country, from the year 1820 to the present time; on the effects of free trade on general prices; and on its progress in foreign countries, especially in France."

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* A few weeks ago all the telegraphs in the kingdom were stopped for one night, and their wires so united as to form a continuous wire of 2,000 miles in length, the two termini being brought into the telegraph-office in Moorgate-street. A message was then repeatedly sent from one to the other, which, travelling the whole length of the 2,000 miles, occupied not one-half the time it has taken us to write this account of it. We believe this was done as a test, preparatory to laying down the Atlantic telegraph.

We have neither room nor time to go into this question, but we strongly recommend those of our readers who have the opportunity, to peruse for themselves this part of the work, which contains much matter for reflection. No one now believes or hopes that we shall ever be able to return to the former system. More than this, it is now perfectly obvious that the great foreign nations of Europe must very soon prepare to follow the example of England, however distasteful it may be to them. Symptoms of such a change have already appeared in some at least of the legislative bodies of the Continent, who are becoming aware of the disadvantages under which they labour in their commercial relations under the exclusive system.

We come to "Part 5, On the Management and Policy of the Bank of England during the period 1844-46, with special reference to the operation of the Bank Charter Act of 1844." This part, which consists of 27 sections, was published by Mr. Tooke in a separate form early in the year 1856, in consequence of the monetary pressure at the close of the previous year, and has therefore already been before the public a considerable time. In other respects the subject is so wide and so abstruse as to preclude the possibility of doing it justice here. That the operations of the Bank of England, frequently forced by legislation, have a material, and sometimes most injurious influence on prices, no one who has at all watched the proceedings of that establishment entertains a doubt; and it is probable that nothing but a complete revision and remodelling of its management will rectify the evils, or afford relief and security to our monetary system. The frequent occurrence of panics, only mitigated by the prudent combination of the private bankers, is a subject that demands enquiry as to how far the laws relating to and restricting the Bank of England have to do with them? Certain it is, that whilst we have no right to look for absolute wisdom in the proceedings of a large *commercial establishment* like that of the Bank of England—for such it essentially is—the individual members of which frequently have interests of their own at variance with those of the public, that public has a just right to see that the evil necessarily attendant upon an imperfect system, is not aggravated by legislative restrictions. These often cause the commerce of the country to alternate between the zenith of prosperity and the nadir of monetary distress. With these remarks we may leave our readers to the pamphlet itself.*

Part 6 contains 29 sections on "the policy pursued in France since 1848 by the Republic, the Presidency, and the Empire, with reference to the management of the Bank of France, and the formation of institutions of credit, with an outline of the general financial measures which have been adopted." This part is of a similar character with Part 5, and is even more abstruse and less interesting to the general reader, although far otherwise to the political economist. There is, however, a *depth* in the policy and proceedings of the financial authorities of France, which defies the comprehension of ordinary minds to fathom. Still less is it possible to divine what will be the result of the policy now being pursued by the Government and the Bank of France; but we know that there are misgivings in some competent quarters as to the safety or permanence of the French financial scheme—it can scarcely be called a *system*—which nothing but a "run of national good luck" would have kept afloat so long. The very immorality of the policy pursued, such as absolutely reduces the Bureau de Finance to a gambling house, is sufficient eventually to ensure its destruction; and woe be to France when the bubble bursts. We have every reason to believe that the present ruler of the French people is better qualified, in regard to decision of character and tact, for governing that volatile people than any other man living. But what is morally wrong can never be politically right. Unfortunately, with these useful qualities are associated others of so exceptionable a character, as to weaken the stability of his position and imperil the most important interests of the nation. After all the mighty changes which that nation has undergone the last seventy years, no reflecting man can contemplate without dismay the possibility of another convulsion, which would shake to its foundation the whole social fabric, not only of France, but of every nation in continental Europe. The question of prices of the necessaries of life, which has occupied so greatly the attention of Napoleon, is in itself a mere bagatelle, compared with the higher interests involved in his policy, so far ignored by him or kept in the back-ground for a more convenient season.

Let us now proceed with our notice of Part 7—"On the order, extent, and character of the changes which have been produced during the nine years 1848-56, by the new supplies of gold from California and Australia."

Mr. Tooke has designedly kept this question until the last; not because it is the least of those causes which have been promoting the prosperity and well-being of this and other countries, but "because, more than any other, it has modified in the most powerful degree the economical and commercial history of the last nine years." It is very probable, indeed, that, but for the influx of gold, the other great movements that have been discussed would have been in imminent danger of failure, and that its occurrence alone enabled the nation to sustain those enormous calls upon it which have taken place in that period.

We have already, in our first notice, anticipated this part of the subject to a certain extent; but we consider it of so much importance, that we have no scruple in going over again a part of what we then stated.

The history of gold and silver in these volumes carries us back to the period of the discovery of the Mexican and Peruvian stores of the precious metals. The quantity received from those sources from that period (say 1530) to the year 1848 is estimated at a much lower amount by Mr. Tooke than by Humboldt and other previous writers on the subject. The former, we believe, had an opportunity of inspecting the public records, or at least of learning from authority their contents, as to the quantity of gold and silver which passed through the Custom-houses of Spain, and he estimates it at 9½ millions sterling per annum. Malte Brun also puts the quantity at the value of 39 millions of piastres, which, reckoning the piastre at 4s., gives £7,800,000 sterling ;* and the Abbé Raynal makes the average for 288 years amount to £5,369,318 sterling per annum. Thus Humboldt makes the aggregate for 288 years amount to 2,736 millions, Malte Brun £2,346,400,000. and the Abbé Raynal £1,546,363,584 sterling. On the other hand, Mr. Tooke, following Danson and Jacob, makes the aggregate amount in 346 years, from 1492 to 1848, only 1,513 millions, or about 4⅗ millions per annum. The probability is, that the quantity exceeded *any* of the above estimates, the Custom-house returns being no correct data to go by, on account of the vast quantity which was smuggled out of the countries, by the direct and universal connivance of those employed to prevent it.

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* On the Bank Charter Act of 1844, its Principles and Operation; with Suggestions for an Improved Administration of the Bank of England. By Thomas Tooke. Longmans, 1856. pp. 179. The preface is dated December 17th, 1855.

The produce, however, of the mines of Spanish America previous to 1848, has been thrown into the shade by the Californian and Australian discoveries. In nine years from the above period gold alone has been received to the amount of 174 millions sterling, although the Australian deposits of that metal were not discovered until 1851 ; since which, they have produced, up to 1856, sixty millions sterling value, in the following proportions each year : —

1851	£999,000	1854	£9,930,000
1852	10,708,000	1855	12,664,000
1853	11,489,000	1856	14,017,000

Thus the quantity is annually increasing ; and as the fields in which it is found are of almost boundless extent, this must necessarily be the case, as science and machinery are brought in aid of manual labour in the extraction of the metal from the quartz. The way in which this large quantity of gold has been disposed of is as follows :—

"AVERAGE OF GOLD AND SILVER, NINE YEARS, 1848 TO 1856, AT THE MINTS OF GREAT BRITAIN, FRANCE, AND THE UNITED STATES."

(1) Gold Coinage.

YEARS.	ENGLAND.	FRANCE.	U. STATES.
1848 to 1851..	£10,522,000	£16,880,000	£21,478,000
1852 to 1856..	39,856,000	£71,471,000	47,066,000
Total....	£50,378,000	£88,351,000	£68,544,000
(2) Silver Coinage.			
1848 to 1851..	£372,000	£16,880,000	£1,359,000
1852 to 1856..	1,688,000	6,751,000	4,819,000
Total....	£2,060,000	£23,631,000	£6,178,000

It is impossible to estimate to its fullest extent the influence of this large addition to the metallic circulation of the most commercial countries of the world. In order to arrive at anything like a correct idea on the subject, we must look not only at its effect upon prices, which appears even on the surface, but also in connection with the great enterprises of the age, the condition of at least some of the governments of Europe, and the immense extension of the commerce in those nations which have shared most largely in its distribution. The difference in the operation and effect of this increase upon England and France, regulated by the difference in the political condition of those countries, forms perhaps the most striking feature in the history of the discovery. England, secure in a credit, public and private, of unbounded extent, receives the gold from the fields as she would a consignment of sugar from the West Indies, or any other commodity. The gold represents manufactures, and other produce sent out in exchange, upon which the manufacturers receive their wonted profit : it is with them a transaction of barter. We retain so much of the gold and silver as is required for our metallic circulation, *and no more ;* the system of paper money—sustained by public and private credit—answering every purpose of commerce much better, on account of its convenience. Any man, for instance, would rather receive, and carry about with him, a thousand-pound note than a thousand sovereigns. We, therefore, retain what we require of the gold and silver as specie, and pass the surplus, at a profit, to our neighbours, who receive it with eagerness. Thus, every way, the nation is enriched by the gold, although but a small part of it remains in the country, being only of use in the minor transactions of business at home, and for payments in foreign countries where a barter trade does not exist—as with Russia.

But with France the case is different, because public and private credit have a lower standard of value there than in England. It was, indeed, a fortunate event for that country that the influx of gold into Europe took place when it did. For, although at an enormous expense and risk of future convulsion, it has enabled the present ruler to maintain his position, and to meet those heavy demands made upon the public resources of France in consequence of the Russian war, as well as from the novel system introduced by him of sustaining trade and the public credit. The danger there, will begin when the latter receives a financial shock, which would lead the people to hoard the gold, as was done previous to, and during the first revolution. We should be glad to see France overcome these difficulties ; but there is no analogy in history to afford data on which to judge of the ultimate effect of the financial policy of Louis Napoleon. The late Mr. Burke, being asked what he thought would be the result of the French Revolution, replied — "It is beyond the power of the most far-seeing man to form an opinion ; *the Revolution is an event without precedent, and therefore without prognostic.*" Might not the same be said of the financial policy of the French Government at the present time ?

With respect to the effect on prices in this country from the influx of gold, Mr. Tooke estimates that the rise in wages of labour has been from 15 to 20 per cent. over the previous rates ; but relative to the price of the leading commodities of trade, he thinks that whatever advances have taken place may be accounted for, irrespectively of the influx of gold, which has not affected them *in an appreciable degree.*

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* The following passage occurs in "Harris's Voyages" :— "There was brought into the King's Exchequer, in Mexico, in 1730, one million marks of silver—*not more than one-fifth* of what was taken from the mines, which gives five millions of marks of 8 ounces each. So that if we compute this silver at 5s. per ounce, then the inhabitants of Mexico receive ten millions sterling annually from the Mexican mines." It is well-known that more than three-fourths the gold and silver was smuggled out of the country.

We think Mr. Tooke is wrong in this conclusion, and we find the proof of it in the advance of labour itself, which would alone cause a rise in the price of commodities—the produce of labour. Has the influx of gold had no appreciable effect in producing the high prices of corn for the last three years, when we certainly have had average crops, and one (1854) far above an average ? Mr. Tooke refers the advance to the influence of the laws of demand and supply ; but have not these main elements of commerce been powerfully affected by the influx of gold ? Has not the consumption of all the main articles of life increased in every department of society, especially amongst the manufacturing operatives, from whom, during the high prices of bread-corn, we have heard not a whisper of complaint or remonstrance ? Mr. Tooke, again, supports his argument by the fact that, between the years 1800 and 1818 the stock of gold and silver in Europe and America had received an addition of 58 per cent. without any effect upon the relative value of gold. But this may be accounted for by the large increase of the trade of the world, as well as of the populations of Europe ; both which causes would acquire an increase of specie circulation to the full extent of that per-centage. When, however, there came to be added to the usual supply a new and greatly enlarged one, by which the stock is increased in nine years to the extent of 50 per cent. in an accelerated and accelerating proportion, the fact becomes certain that gold has fallen in relative value, and will not purchase the same amount of goods of almost any kind as it would before 1848.

We cannot go further into the question, but we earnestly recommend Mr. Tooke's volumes to the reader. He will find in them a fund of information on the various topics they embrace, both novel and instructive, and even entertaining.

THE ACTION OF THE ATMOSPHERE UPON THE SOIL.

Of the five thousand members of the Royal Agricultural Society to whom its Journal is distributed, how many will read Mr. Jamieson's Prize Essay " On the Action of the Atmosphere upon newly-deepened Soil ?" And, of those readers who may have courage to grapple with its mass of scientific details, how many will close their perusal with a clear perception of the ways in which fresh soil is affected by the atmosphere ? Its sixty-seven pages of elaborately searched-out facts and principles—philosophical, chemical, and geological—are crammed full of learning; comprising no less than fifty-four tabulated statements, and citing as authorities no fewer than seventy-seven British and eighty-nine French, German, and other foreign philosophers and experimenters. The author's knowledge of the natural sciences, and his acquaintance with foreign literature on the subject of agricultural chemistry, certainly inspire us with respect and admiration; but we cannot help feeling that the practical conclusions from all this immense research and amassed information are comparatively meagre and insignificant. In these days of pressing business and rigorous " division of labour," even in topics of study, the agriculturist has little time to ponder over " molecules of ether," " oligoclase and zeolite," the mysteries of chemical nomenclature and all sorts of abstruse technicalities, in order to make out for himself the bearing of all this wearisome cleverness upon his own field-culture. It is, indeed, much to be regretted that Mr. Jamieson has not followed the example of Dr. Voelcker, and some other scientific writers in the Journal, who at the close of their treatises give us a concise intelligible summary of all the deductions which their investigations afford of actual use and interest to the farmer.

We had looked forward with large expectations to the publication of this essay, hoping for a lucid summary of the manner in which exposure to atmospheric influences effects an increase of fertility in soil ; the advantages or otherwise of deepening different descriptions of land ; the comparative merits of subsoil stirring and of trenching ; of deep and shallow drainage ; the necessity for occasionally inverting the staple soil ; the propriety of fallowing; the possibility of revolutionizing our systems of cultivation by minuter and more incessant tillage—as well as to various points in relation to rotations of cropping, covering and exposing the surface of land in different seasons ; and, again, nitrogenous and mineral manuring, compared with fertilizing by aëration and the admission of rains, gases, &c., by tillage. Let us now endeavour to outline an idea of what we found.

The first part of the essay takes into consideration the solar influences ; the next treats of the action of the atmosphere ; and then the ingredients of the soil are examined, with a view of showing how they are likely to be affected by the agencies described. On the present occasion we have room only for a notice of the first of these divisions.

The sun's rays are stated to possess at least four distinct properties : First, the calorific, or power of imparting heat ; second, the luminous, or power of imparting light ; third, the chemical, or power of inducing chemical changes ; and fourth, the phosphorogenic, or power of inducing phosphorescence. Under the first head we have the temperatures attained by surface-soils in different climates and seasons, according to their colour, dryness, &c. ; from which it appears that under a clear sun the ground is often very much warmer than the air in the shade ; and " under such a high degree of heat the decomposition of the organic matter of the soil must go on at a great rate, with the evolution of much ammonia and carbonic acid, agents which play an important part in the modifications of the mineral matter of the soil." Now we regret that Mr. Jamieson has not here favoured us with a corollary upon the summer exposure and " baking " of fallows—explaining the use of so heating large clods; the danger, on the other hand, of thus wasting volatile nutriment from ground in a pulverulent state; and, again, the extent to which the shading of land by different sorts of cropping may account for the benefits of rotations.

The degrees of cold observed in soils, and the range of their temperature, are next reviewed; the conclusions being, that " the ground, even in this climate, must be subject to a range of temperature of which the recorded observations of thermometers hung in the usual manner give little conception." " The ground at a foot deep in this country appears to be scarcely affected by frost, unless where it has been loosened up by the plough or spade." " The action of frost upon the raw mineral matter constituting newly-exposed soil, is of the utmost importance. This mineral matter consists of the debris of the various rocks which are found in the country, and is, in fact, an aggregation of minute crystals and earthy matter. In each pebble and fragment of undecomposed stone these crystals are interlaced in all directions. Bodies of this nature exposed to the air and moisture absorb water, which enters into the interstices and crevices between the faces of these crystals, or into the pores of the raw clots of earth. Should frost then take place, this contained water changes into ice; and in so doing, by a well-known law, expands with irresistible force, shivering the substance in which it is lodged into a number of particles, which number is measured by the quantity of crevices or pores into which the moisture and frost have penetrated. So long as the frost lasts these particles are all bound together by the enveloping ice, but immediately when thaw comes they separate and fall down; then the lump which before showed but one surface to the air has a multitude of surfaces, and the atmosphere acts upon it in an infinitely multiplied degree. It will be shown that the property of condensing some important gases within a porous body is in proportion to the extent of superficies that the gas can meet with. The comminution or crumbling down of the particles of the soil is therefore, even in this respect alone, an important feature: the earthy salts of the soil are also thereby more extensively exposed to the action of the atmospheric influences in bringing about beneficial changes in their constitution. The practical importance of this is well-known to farmers, who, in preparing their stubbles for the next season's crop of turnips, or such-like roots, always endeavour to get as great a breadth of land well turned over before the month of December as they possibly can, in order that it may get the full benefit of the winter's frost." We like this elucidation of the manner in which variations of temperature effect the disintegration of the soil, and of the uses of such minute subdivision in fertilizing and preparing the soil for plants; and there is no doubt that all good husbandmen are aware of the advantages of a winter weathering for their land. But we wish something had been added upon points not so " well-known to farmers"; as, for instance, the depth to which heat and cold will penetrate with very deep tillage, and the policy of thus admitting the disintegrating agencies far down into the recesses of the subsoil.

With regard to the other characteristic properties of the solar rays, the history given of the discoveries of philosophers in separating the calorific rays from the luminous, and the luminous from the chemical, is curious rather than interesting in an agricultural publication. It has long been a question whether the upturning of soil from burial in darkness to the action of the sunbeams, and, again, the covering and concealing of the soil, may not have a considerable share in causing the results which follow exposure and inversion by tillage, and the hiding of the surface beneath vegetation or coatings of manure. Is it the nature of earth to submit to the chemical changes requisite for supplying plants with nourishment, most readily in the dark; just as vegetables exert their vital functions most vigorously in the light? And, if so, can some anomalies in the theory of rotations be cleared up in consequence, and some improvements be suggested in our field practice? Our author offers the following information: " Mr Hunt has collected a long list of those bodies which have been observed to be more or less susceptible of chemical change under the influence of the solar radiations, embracing various salts and compounds of silver, gold, platinum, mercury, iron, copper, manganese, lead, tin, and other less frequent metals; also combinations of phosphorus and ammonia, chlorine and nitrogen, nitric acid, and many resinous bodies. Gay Lussac and Thenard observed that hydrogen and chlorine combine so rapidly in sunshine as sometimes to explode, although they do not unite at all in the dark, and only slowly in diffused light; and Dr. Draper, of New York, has stated the remarkable fact that chlorine which has been exposed to daylight or sunshine possesses qualities which are not found in chlorine made and kept in the dark...... Dr. George Wilson ascertained that in darkness dry chlorine may be kept for three years in contact with colours without bleaching them, but that a few weeks sufficed to produce that effect in sunlight...... Sulphuretted hydrogen, if made dry, and kept in darkness, does not bleach, but recovers its bleaching power with the assistance of sunlight, and acts also readily if moist. Oxygen was found to be similarly affected, and also, in a fainter degree, carbonic acid. Nitrogen exerts a faint bleaching action under exposure to sunlight, although it has no appreciable power in the dark, whether moist or dry. Some of these gases are present in the soil in large quantity, and the atmosphere is composed almost entirely of the last three. The above would show that under sunlight they act with an energy unknown in its absence. Can the conclusion therefore be avoided that, although we are yet in a great measure ignorant of the precise influence it exerts, light doubtless affects in various ways the mutual action of the atmosphere and the soil, and that earth long buried, on being turned up to the surface, is exposed to a number of new forces tending to make its particles enter into fresh arrangements, and that among these light is not the least prominent in its effects?" As there are so many bodies in nature, both organic and inorganic, which are sensible to the chemical influences of the sunbeams, it is evident that the mere shading or covering of land, or the opening up and revealing it to the light, must affect its condition; and, however delicate and minute may be the changes observed in the apparatus of the experimenter, we should remember that, when multiplied so as to become applicable to hundreds of tons of soil, and thousands of cubic feet of the atmosphere, their importance is far from being infinitesimal and inappreciable.

The second portion of Mr. Jamieson's prize essay relates to the influence exerted by the constituents of the atmosphere; the first portion, as we have already noticed, being devoted to a consideration of the action of the sunbeams. We will try to sift out, from the author's learned and most valuable accumulation of facts and recorded observations in chemical science, so much as appears likely to be useful to the agriculturist.

The atmosphere being a mixture of nitrogen, oxygen, carbonic acid, nitric acid, and ammonia, while carburetted hydrogen, sulphurous acid, phosphoric acid, muriatic acid, sulphuretted hydrogen, and phosphoretted hydrogen have all been found in it, the properties of the chief of these ingredients are passed under review; the greater part of the changes which the mineral and organic matter of the soil undergo being attributed to the action of oxygen. This element has a very strong affinity for organic matter in a state of putrefaction; and water and dew are powerful agents in effecting oxidation, from the large amount of this constituent contained in them. Carbonic acid is formed abundantly by the decay of dead organic matter, and found in rain, in springs, and in all natural waters; and it is mainly through its slowly-operating, but marvellously powerful solvent properties, that the mineral matters of the soil are brought into form fit for being taken up by the rootlets of plants. The oxygen of the air also, acting upon the organic matters in the soil, produces a constant, although a slow, evolution of carbonic acid, which is absorbed by the moisture existing in the soil; and the air contained in the pores of the soil is often proportionally richer in this gas than the atmosphere is, especially after recent manuring. Ammonia and nitric acid—the latter in much the largest proportion—exist in the air, and are washed out of it by rains. The first showers after dry weather bring down more than the average quantity found in rain-water; and the water of dew and fogs is much richer in ammonia than the rain. The earth also greedily absorbs ammonia from the air itself, each particle of the surface being continually brought into contact with a fresh supply, as the air sweeps over the ground at a considerable velocity. "In addition to the ammonia which the atmosphere supplies directly, it furnishes it also indirectly by its action upon the nitrogenised matters that may be in the soil." "An important action of the ammonia is its power of dissolving the mineral matter of the soil. ...... Some of the mineral constituents of plants are dissolved in the soil only by water containing carbonic acid or some salt of ammonia." This dissolving power of ammonia upon silicates, phosphates, and other earthy matters of the soil, is perhaps a more important property than its use merely as a supplier of nitrogen; and its being thus a means of introducing into the plant some necessary substances which might without it remain in an insoluble form, may certainly be taken as an explanation of the great discrepancy found between the quantity of ammonia supplied in manure and the small proportion recovered in the crop. The author alludes to the possibility of drawing more largely than we do at present upon these stores of the atmosphere, in lieu of nitrogenous manuring—a practice which is in complete and successful operation at Lois-Weedon, and partially carried out in other culture. "When it is considered that many of the nitrogenised constituents of the crops seldom find their way into the dung-heap, but are sent off the farm in the grain and live-stock sold, and that nitrates and ammoniacal manures are expensive articles to purchase, then the amount of these ingredients of the atmosphere, as available sources of nitrogen to the soil and the plants that grow upon it, becomes a very interesting inquiry; for if it can be shown that by certain not-too-expensive modes of management the surfaces of our fields can be made to catch enough of these substances for the wants of each crop, a great advantage would be gained, and a standing difficulty be removed. Liebig, in a recent publication, writes: "I consider myself as perfectly justified in concluding, from my experiments, that on ordinary farms—*provided we give to the soil the proper physical quality and composition*—there may be, by degrees, such an amount of ammonia collected or condensed from the atmosphere as to be more than sufficient, with the available mineral constituents present in the soil, to obtain the maximum of produce for each soil. This, of course, does not exclude the feasibility of attaining a still higher produce, if we increase the proportion of mineral and atmospheric constituents in the soil."

The action of the watery vapour diffused through the atmosphere, and of rain water, is next taken into consideration; and the following are the inferences from a great variety of facts, the collection of which shows the author's intimate knowledge of all the branches of his subject—"Rain-water, being derived by the action of evaporation and wind from the sea, may be the means of conveying a very sensible amount of many salts to the soil." "Rain-water, on reaching the ground, begins to dissolve a part of almost everything it meets with, in its passage through the soil, such as carbonates and phosphates of lime, magnesia and iron, silicates of lime, potash and soda, organic matters, &c." "Water containing common salt has also a great solvent power upon some substances, surpassing even that of carbonic-acid water...... Salt occurs largely in rain-water in some places, its solvent effect may therefore be of some benefit." The quantity of nitrogen supplied by the ammonia and nitric-acid of rain is so considerable (largest of all in the vicinity of towns), in addition to that which is obtained by the soil or plants directly from the air, that it "appears quite conceivable that, under favourable circumstances, the soil and plants growing upon it may obtain as much nitrogen from the atmosphere as may suffice for many of the crops usually grown, without the agency of manure—a supposition which the results obtained by the Rev. Mr. Smith, of Lois-Weedon, tend to justify. And the above calculations would also point to the propriety of employing mostly mineral manures in the immediate neighbourhood of large towns, trusting to the atmosphere supplying the greater part of the necessary nitrogen and carbonic acid."

Of course the practical inference from this demonstrated richness of the air and its moisture—both in substances which directly feed, and others that cook or prepare many ingredients present in the soil, but in a raw, unpalatable condition for plants—is, that deep drainage, deep culture, and elaborate surface pulverization ought to be, wherever practicable, main points in our husbandry.

BOYDELL'S TRACTION ENGINE AND ENDLESS RAILWAY.

On Wednesday, May 27, we left the "busy hum" of the city, to resort to where the ploughman has been wont to "plod his weary way." In plain terms, we joined the company who went to Wimbish Hall Farm, to witness the trial of a machine, that beyond a doubt is one of those inventions destined to supersede, to a certain extent, the most ancient implement of husbandry—the dexterous management of which has hitherto constituted the proudest achievement of the agricultural labourer and the glory of the farmer. Notwithstanding the claims that prescription confers upon this old and favourite servant, simplified and perfected as it has been by science, and beautified by artistic skill, its condemnation as a cultivator solely dependent for its application upon animal power, is sufficiently insured to render its decline but a question of time. Ere long it must be allied with, or superseded by, the monster energy of steam in place of horse power.

Wimbish Hall is situated at the distance of four miles from Saffron Walden in Essex. The farm on which the trial of the Traction Engine took place has recently changed hands, being now tenanted by a young farmer of the name of Woodham. The soil consists of a strong —*very strong* clay, common to the district, but having a subsoil of a mixture of clay, sand, and marl. The tract of land evidently over-lies the chalk basin, the outcrop of which is seen on the east side of Walden, where the bed of that mineral is of indefinite thickness, but exhibiting at the Walden Lime-works a perpendicular face of 25 or 30 feet. The field on which we found the machine at work was perhaps as unfavourable a one, for the success of the trial, as could have been selected in the whole kingdom. With a soil naturally heavy, adhesive, and intractable, it had, as a matter of course, been latterly neglected by the out-going tenant; and, being under a dead untilled fallow, was sufficiently hard-baked by the sun, wind, and rain, alternately, to make it difficult enough to manage under any circumstances, but particularly so with a new machine, handled by men unaccustomed to its peculiarities. Added to these disadvantages, was the arrangement, by which the land was to be ploughed *athwart* the old ridges, which greatly increased the difficulty of working the ploughs. It was remarked to us by several old farmers, that "if they worked well on that land, they would do so anywhere."

There were only three ploughs at work when we reached the field. On the first day (Tuesday), there were, as we understood, six, or rather three double ploughs; but it was evident these were not adapted, in point of strength, to the stubborn character of the soil, for all of them were broken or strained. Those subsequently used were the common ploughs of the farm. The machine was travelling at the rate of about three miles per hour, or probably two and three-quarters miles, exclusive of stoppages. Its motion was steady and direct; and it appeared to be under as complete control, in regard to stopping and backing, *to an inch*, as a horse; the ploughs performing their part with perfect efficiency, if not with ease to the men who held them, and who had evidently no sinecure berth of it. The furrows turned were fully a foot in width, and four, six, eight, and even ten inches in depth, accordingly as the managing engineer wished to test the capability of the machine. We particularly observed that the furrows, instead of being turned over in one continuous, unbroken surface, which, in the common ploughing of such land, renders the harrow useless until the soil has been mellowed by the atmosphere, were, by the quick action of the ploughs, broken up and separated, so as to expose the whole body of earth to the action of the air. We have no doubt that, if necessary, the harrows might have been efficiently employed the next day; for, on pressing the soil with the foot, it at once crumbled to pieces. We mention this as of particular importance on so adhesive a soil as the one on which the trial took place. In conversation with several of the farmers of the district, they one and all expressed their approval of the manner in which the ploughs performed their work. Some of the older ones feared the ploughing "was too deep," admitting, however, at the same time, that, where the land-drains had been dug (which, of course, were much deeper), they would expect the best crops, either of corn or roots. A delay of three hours took place, in consequence of the breaking of a piston belonging to the pump. This, however, was neatly repaired by a smith in the village; and the machine got to work again about four o'clock.

Having thus given our opinion of the work performed, in which respect we consider the trial to have been successful, we have the less pleasing, but not less necessary task of stating what, according to our views, are the most apparent defects of the machine. These are chiefly confined to the mode of traction, which, as applied when we saw it, appeared irregular and confused, rendering the ploughs very liable to be thrown out of their work. It struck us that this was chiefly owing to the distance between the tractive power and the plough; or, in other words, the length of the traction-chain, which increases both the difficulty of holding the plough and the irregularity of its movement. In common ploughing with horses, it is considered that the nearer the plough is to the motive power the steadier and more regularly it works; on the principle that the segment of a small circle is under more complete control than that of a large one, the gyrations of which, too, are wider when a disturbance takes place.

Another inconvenience, arising we apprehend from the same cause, is the great strain upon the men holding the ploughs. This on such a soil as that of Wimbish Hall Farm must very soon exhaust their strength. And besides, the chains approaching so near each other are liable to get entangled, whilst the men find it very difficult to keep clear of them and avoid an accident. They certainly ought to have nothing to think of but the work before them, which, with a machine of such power, requires undivided attention; and this cannot be given with the chains in such close proximity to the legs of the ploughmen, as was the case on Wednesday. Possibly this objection may be in some respect modified with the double ploughs, which allow more space between each chain. But the former objection holds equally good with them as with the single plough, being at the same time, of double the importance in regard to delay.

The Endless Railway, unsightly though it be, performed its task with perfect efficiency, and conveyed the eight or ten tons' weight over the land, without any material indentation to mark its pressure. The steam engine was of ten-horse power; but with a pressure of 70lbs. is equal to thirteen-horse. This allowed four and one-third horse power to each plough; though it was the opinion of some of the farmers that it would have required five or six horses to have drawn a furrow of the same width and depth on the same land. The engine consumes about 10 cwt. of coals per day, when at full work; and the engineer calculated that it would turn over eight acres of such land as that of Wimbish Hall Farm, in the same time.

On the whole, we consider the trial to have been a perfectly successful one, and that it demonstrates to a certainty, the applicability of steam, as a motive power, to the cultivation of the land. Boydell's machine had already been tried with success at Chelmsford, Thetford, and other places, upon soil both of a kinder and lighter texture, and that had also been previously under proper cultivation. At Thetford, as we understand, with six ploughs, it turned over 20 acres per day; and had the whole power of the engine been applied, it would have completed 30 acres. It only wanted a trial on such soil as that at Wimbish Hall to complete the series. We consider *that* and the Thetford soil as the two extremes of light and heavy land, after cultivating which, with success, no doubt can be entertained of the machine working well upon soils of intermediate texture.

Whatever defects therefore the machine may exhibit in this its infancy, they may scarcely interfere with the question at issue; as they will undoubtedly be rectified as experience points them out. Certainly we have advanced far enough already to be assured that steam-ploughing is perfectly practicable. And with so many mechanical heads at work on the subject, we confidently expect, ere long, to see a perfect and simplified machine, applicable to all soils, and at least as economical as horse-power.

THE AVAILABLE SUBSTITUTES FOR GUANO.

What *shall* we do for guano? We have endeavoured to answer this question in previous articles, by reference to the vast quantities of phosphates and ammonia now wasted at home in the sewage of towns, while we are importing those precious substances from the other side of the globe; and we have endeavoured to draw attention to the resources afforded in small quantities by our hen-roosts, and in larger quantities by our piggeries. With reference to the former there is one argument which we omitted, and to which we beg leave to refer—it is this: poultry is not kept, because it is not so remunerative as sheep, oxen, and pigs. Bullocks, however, are often kept when they are avowedly not remunerative, except with reference to the manure they make. They do not furnish drill manure. If manures in that form are essential to the present system of farming, might it not answer to keep a stock of poultry merely for their manure? Turkeys are reared in large quantities in Norfolk. They are reared by the cottager and small farmers, for there are still small farmers on the clay districts of Norfolk. They are purchased just before harvest by the large farmers, to consume the shuck, as it is called, or shed corn, in the stubbles, for which they are considered to make better returns than pigs. At a later period of the year they are transferred to what may be called the "turkey merchants," who finish them for the London market. Till lately there were whole fields of these turkeys to be seen at certain seasons of the year near Norwich, where they were kept by a dealer till they were ready for market. The stench arising from the guano which they made was so great, that under the Health of Towns Act the turkeys have been banished, as a nuisance, to a greater distance. What the effect of the manure on the land was we have not heard—probably it was the same as that observable on some fields near towns on which fairs are held—the land is over-manured, and the manure does no good. Part of the droppings was swept up and sold; but it often struck us that with a little management and a little more chemical knowledge, a considerable manufacture of guano might have been carried on there. But enough of the birds; let us see what can be done with the fishes.

A very considerable portion of the sprats, herrings, and pilchards caught on our coasts are now consumed as manure within a short distance, as the noses of those who have the misfortune to live in the neighbourhood of the fisheries can abundantly testify. It is testified also not unfrequently by the fevers which it engenders. Objections have been raised on this score against the employment of town sewage to be pumped on the land. The fact, however, is that the stench arising from that cause is transient and tolerable, compared with that arising from sprats, herrings, pilchards, star fish or five-fingers, mussels, and whale blubber. We are a strange, inconsistent people. There is no nuisance too glaring to be tolerated, provided only it has received the sanction of antiquity; while there are no bounds to the indignation which is excited by one of far less enormity, with youth on its side. We have alluded to the star fish and mussels caught for manure. The dredging for them affords a subsistence to the "free dredgers" of some of the oyster burrows of the estuary of the Thames when from mismanagement the oyster-beds have become unstocked, or it is not the season for dredging them. The taking of star fish serves a double purpose. It not only supplies the farmers with manure, and the dredgers with employment, but it destroys one of the greatest enemies of the oyster, devoured in considerable quantities by the star fish. They thrust their mail-covered arms between the valves when open, and feast on the poor oyster, who would otherwise be swallowed by that insatiable and omnivorous consumer—man. Another enemy of the oyster, with whom the dredgers wage war, is the whelk. Like all those molluscs which have a canal to their shells, the whelk bores a hole in the shells of other molluscs, and devours them. The frequenters of our watering-places must often have observed dead shells with these holes bored in them. The scientific name of these star fish is *asteridæ*, and we would recommend to our readers the perusal of that beautifully illustrated work "The British Asteridæ," by the late Edward Forbes. Forbes was a great dredger. It was not, however, to obtain star fish or molluscs for manure, but to ascertain the different marine species characteristic of different zones of depth, and the depth at which marine life ceases. There is a pearl fishery in Wales, at the mouth of the Conway. It has been celebrated for its pearls since the days of the Romans, and more celebrated in Roman days than the present. The pearls of the Conway are derived from two different genera of molluscs: the one a freshwater, *unio*—*unio margaratiferous*, producing large pearls; the other, *mytilus edulis*, the common marine edible mussel. The pearls afforded by the former are few, and of the largest size. The *unio* in the Scottish rivers has also yielded pearls. The greater portion of the Welsh pearls were derived from the *mytilus edulis*. They were all bought up by one person, and the use to which they were applied, and how they were dispossd of in London, was involved in mystery. Some accounts said they were ground down to form the body of rouge for ladies' faces; others, that they were used in the manufacture of glass beads in imitation of pearls. But what, it may be asked, has the fishery for pearls to do with agriculture and manure? The collecting of these pearls furnished employment to a number of women and children, who obtained remunerative wages from it. The mussels, when collected, were boiled on the beach. The boiled mass was well stirred, and the pearls were collected from the bottom of the boiler, while the shells and the bodies of the animals, with their ammonia and their phosphates, were left upon the beach. This was the state of things some twenty years ago, when the first box of guano was imported into Liverpool. Whether the pearl fishery is still in existence we know not, nor, if it is, whether this source of manure is still wasted. It will be strange, in these days of agricultural progress, if there is not some purchaser of guano within reach of this waste. There are plenty of mussel-banks on our shores, which, if they do not yield pearls, will at any rate yield manure, as they do to the dredgers of the oyster-beds of the Thames. Then again, on the Cromer coast, the aged fishermen, who are too much advanced in life for the hardships of the fisheries in the offing, derive, or did derive, a subsistence by catching dog fish, which the farmers purchase for manure. This was the case ten years back, but we believe the facility with which guano has been procured of late has suppressed this branch of domestic industry. Perhaps the dearness of the exotic manure may cause a revival of it, and an extension of the employment to other parts of the coast. Then, again, the refuse of our fishing towns—what becomes of that? Who that has spent a summer at one of our watering-places has not smelt the heads and the offal and the refuse fish thrown away on the beach? What becomes of the refuse fish of all kinds which is caught in the offing? There is but one answer, thrown overboard. Could it not be made worth while to remunerate the fishermen for bringing it to the land? The great objection to all these supplies of fish manure has hitherto been that they are only available near the coast; and that there, in the way they are employed at present, they are a great nuisance as far as regards olfactory and sanitary conditions. But can no means be devised of abating the nuisance and rendering them portable? With respect to sprats, Professor Way proposed to render them available for distant transport by extracting their oil and pressing them into cakes. Why should not fish be salted for manure as well as for food? The refuse salt from the herring curing-houses of Yarmouth is purchased by the farmers of the district for manure. In conclusion, we would suggest to some of those who are so anxious to deodorize the sewage of towns, and to convert it into a solid and portable manure, that they have a much more promising field opened to them in deodorising our fish refuse and refuse fish, and rendering them portable to greater distances, so as to extend their use, while at the same time the disadvantages attending it will be removed. So will the United Kingdom be rendered independent of the foreigner for manure. To render it independent of him for food was once the great object of agricultural ambition. The former undertaking has not yet succeeded; for the food-consuming powers of the country keep far ahead of its production of food, though out of the capabilities of the soil for producing it.

ALLEGED DISCOVERY OF GUANO.

The Spanish Consul-General presents his compliments to the Editor of *The Times* and begs to forward the translation of an article relative to the probable discovery of guano on the southern coast of the island of Cuba, which appeared in the *Madrid Gazette* of the 23rd ult., in hopes it may prove of sufficient interest to merit insertion.

JOSE J. DE MORA, Consul-General.

Consulado General de Espana, en la
Gran Bretana, 1, Cushion-court,
Old Broad-street, June 3.

"Havannah, March 24.

"We have lately spoken of the discovery of a deposit of guano upon the Keys (Cayos) adjacent to the island on its southern side. We announced the appointment and departure of a commission deputed to make a detailed survey of the said rocks, and also notified the fact of the arrival of some cases of samples sent from Trinidad by the commission, from which place, according to the intelligence published in our number of last Sunday, it was announced that the guano had been met with in abundance and of fine quality. We, this day, propose to occupy ourselves more fully with this discovery, entering (although briefly) into its history; for we are of opinion that the facts which have come to our knowledge, and which we are now about to relate, will not be found wanting in interest, more especially since the recent publication of the decree of his Excellency the Governor-Superintendent.

"According to our information, then, the existence of a species of guano upon the Cayos, adjacent to the island, and even upon some point of the island itself, was a circumstance that had been long since ascertained. One of our friends assures us that, happening to be some years back at Trinidad, he had been commissioned by a merchant of Havannah to withdraw from the stores of that city certain bags of guano, with the object of remitting the same to France for the purpose of its being examined with a view to ascertain whether its shipment to that market would be likely to prove advantageous, subsequent to which he had learnt that its transmission having taken place, the answer which had been returned was that the guano was found to be of excellent quality. Again, we learn that D. Tranquilino Sandalio de Noda has declared that among his youthful recollections he remembers that upon the occasion of his sailing towards Batabano from the direction of Veulta Abajo his vessel, having to make her escape from the pursuit of pirates, had been obliged to take refuge upon one of the southern Cayos, where the passengers found they could scarcely sustain the bad odour emitted from the soil, which strong smell, he presumed, must have proceeded from an abundant deposit of guano. But, at all events, we are not aware that up to the present moment any serious investigation has been made of the matter, although it is certain that very powerful reasons exist to lead us to suspect that the greater portion, if not the whole, of the guano which for a long time has been consumed in the United States, under the name of Mexican guano, has been taken from the Cayos upon our southern coast.

"However this may be, in the course of the past year Captain Green, of the American brig Moncure, succeeded in convincing the firm of Tyng and Co., of this city, that guano in large quantities did actually exist upon the Cayos of Jardines and Jardinillos, and that a large profit would be derived from its exploitation, if permission could be obtained to work it. The house of Tyng and Co. applied to his Excellency the Superior Civil Governor, Captain-General and Superintendent of Finance, requesting such exclusive privilege for a certain term, and presenting a sample of the substance in question, submitting that they had established a right to claim that or an equivalent reward for the information, which might be conceded without prejudice to the State, since from the before-mentioned Cayos alone as much as 150,000 tons might be annually extracted.

"As it may naturally be presumed, our supreme authority gave immediate orders that the sample of guano should be analyzed, committing this task to the care of the intelgent Director of the Laboratory of Chymical Investigations. Those who are acquainted with the activity and scientific attainments of that distinguished professor will not be surprised to learn that this commission was promptly and conscientiously performed. Although the analysis did not furnish results entirely conformable to the qualities which had been attributed to the sample of guano submitted, it, on the other hand, gave others more than sufficiently satisfactory and valuable to render it highly advisable to continue the investigation; for although no guano equal to that of Peru had been found, still the substance which had been examined possessed qualities, as a manure, of an exceedingly valuable nature, which would render its employment in our agriculture highly profitable, and even afford ample returns to the Exchequer by the granting licences for its exportation, which would not have been so earnestly sought for without well-grounded reasons for counting upon a profitable return.

"The sample submitted to examination was a substance which, taking the result of its qualitative analysis, was found to contain sulphate of lime or gypsum, traces of salt, or chloride of sodium, phosphate of lime with oxide of iron, carbonate of lime with indications of magnesia, silica and silicate of iron, vegetable organic matter and water combined; the quantitative analysis showing that the sulphate of lime and the traces of salt entered into its composition in the proportion of 40 parts in the 100, the phosphate of lime 20 parts, the carbonate of lime 12, the silica and silicate of iron 2, organic vegetable matter 6, and water and loss 20 parts. Mr. Casaseca very justly called attention to the comparison of this analysis with that of the guano of Peru, from which the sample examined materially differed, since the latter contained neither uric acid, urate of ammonia, or ammoniacal salts. While the average qualitative analysis of the Peruvian guano supplies no sulphate of lime, the sample analyzed contained no less than 40 per cent. of that substance, it being to be observed that no guano hitherto examined had yet furnished gypsum, on which account Mr. Casaseca considered himself authorized in terming it a calcareous stone.

" But Mr. Casaseca was notwithstanding of opinion that this substance was to be considered as a mineral manure of great utility, on account of the large quantity of gypsum it contained, and to a high degree valuable in particular descriptions of cultivation, no less than on account of the remarkable proportion it contained of phosphate of lime, one of the best mineral manures known. He was of opinion, therefore, as we have already stated, that the subject was a matter calling for thorough investigation; and this accordingly is the object with which the commission appointed has set out on its voyage, accompanied by the before-mentioned Captain Green, sent by the firm of Tyng and Company.

" The commission left Batabano on the 6th; on the 7th the steamer arrived, conveying it nearly as far as the extremity of the Rosario Channel, and anchoring near the Cantiles Cayo. This cayo was examined, and an abundance of white guano, similar to that sold in the United States as Mexican guano, was found upon it. On the 8th the Rosario Cayo was examined, and on the 9th the Passages Cayo, upon which was found guano equal to that of the Cantiles. On the 10th, after going in the direction of the Largo Cayo, their explorations were continued with various results, but they had found on some islets in sight of the said cayo an immense number of birds, and a considerable quantity of guano.

" On the 11th, directing their course along the south of the Largo reef and cayo towards the Ballenatos Cayos, they found upon the larger one to the east some guano of superior quality. On the 12th, at daybreak, the steamer went in a direction E. by S. of the Largo Cayo, and visited some cayos which they had not examined on the 10th, meeting with a dark-coloured guano, and upon one of them so immense an assemblage of birds that the very ' sun was darkened by them;' the soil of this cayo was covered with eggs, it being calculated there were as many as a dozen to every square yard. The guano appeared to be abundant, and of excellent quality. The steamer afterwards sailed to Trinidad, from which place the commission was about to leave for the cayos of Doce Leguas, and to continue their explorations as far as the Cruz Cayo, also reserving for examination the cayos situated between the Rosario Channel and the Isle of Pinos.

" But, before resuming their labours, the commission took care to remit to his Excellency the Governor and Captain-General six cases of samples of the qualities of guano, to all appearance distinct, which it had met with at different spots. Some at least of these samples, which we have had the pleasure of inspecting, must differ considerably from that previously analyzed by Mr. Casaseca; for, if we are not mistaken, it cannot be doubted that they exhale ammonia in abundance, and that, consequently, that essential point of distinction between it and the guano of Peru no longer exists.

" The samples have now been since Tuesday last in the hands of Mr. Casaseca, with the view of his making new analyses of the same, so that the definitive results by which we are to abide cannot be long in being made known. Be these what they may, it is our firm conviction that they cannot fail to prove of great importance, as well to the general prosperity of the island as to the interests of the national treasury. For if, as we consider in every way improbable, the guano from the new deposits, whence the samples collected by the commission have been taken, should not be found to be immensely more rich than the former in fertilizing power, the information we have received of the avidity with which the guano most resembling that first analyzed is received on the neighbouring continent, would already assure us of its recognized utility and value for exportation, when once authorized, as it has accordingly since been, by the decree of his Excellency the Governor-Superintendent, of the 12th inst. The liberal terms of this decree deserve our warmest acknowledgments, as much on account of the just discretion exercised in the total avoidance of any grant of monopoly, as on account of the zealous desire shown on behalf of the agricultural interests of this island.

" Such, then, are the facts and observations which we proposed to enregister. That our agriculturists should not show themselves indifferent to the benefits thus conferred upon us by Providence, or ungrateful to the exertions of the authorities, is our sincere desire, as it must needs be of whoever feels a true interest in the prosperity and enrichment of the island."

SHEEP, &c., CONTAGIOUS DISEASES PREVENTION.

A BILL TO AMEND THE ACTS TO PREVENT THE SPREADING OF CONTAGIOUS OR INFECTIOUS DISORDERS AMONGST SHEEP, CATTLE, AND OTHER ANIMALS.

Prepared and brought in by MR. BENTINCK and MR. STAFFORD.

Ordered, by the House of Commons, to be printed, 19th of May, 1857.

Whereas by an act passed in the twelfth year of the reign of her present Majesty, intituled "An act to prevent, until the first day of September one thousand eight hundred and fifty, and to the end of the then session of Parliament, the spreading of contagious or infectious disorders among sheep, cattle, and other animals," after reciting that a contagious or infectious disorder known or described as the sheep-pox or "variola ovina" then prevailed among the sheep in some parts of the United Kingdom, and that it was necessary to take measures to prevent such disorder from spreading, it was enacted (amongst other things), that in case any sheep or lambs infected with or labouring under the said disorder, or any disorder of the like nature, should be exposed or offered for sale, or be brought or attempted to be brought for the purpose of being so exposed or offered for sale, in any market, fair, or other open or public place where other animals are commonly exposed for sale, then and in any such case it should be lawful for any clerk or inspector or other officer of such fair or market, or for any constable or policeman, or for any other person authorized by the mayor, or by any two justices of the peace having jurisdiction in the place, or for any person authorized or appointed by her Majesty in council, to seize the same, and to report such seizure to the mayor or any justice of the peace having jurisdiction in the place; and that it should be lawful for such mayor or justice, either to restore the same, or to cause the same, together with any pens, hurdles, troughs, litter, hay, straw, or other articles which he might judge likely to have been affected thereby, to be forthwith destroyed or otherwise disposed of in such manner as he should deem proper, or as might be directed in the manner therein-after provided; and any person bringing or attempting to bring any sheep, lambs, oxen, bulls, cows, calves, or other horned cattle into any such market, fair, or open or public place as aforesaid, knowing such sheep, lambs, or cattle to be infected with or labouring under either of such disorders as aforesaid, should, upon conviction thereof, forfeit and pay for each and every such offence a sum not exceeding twenty pounds; and it was further enacted, that if any person should turn out, keep, or depasture any sheep or lambs infected with or labouring under the said disorder in or upon any forest, chase, wood, moor, marsh, heath, common, waste land, open field, road side, or other undivided or uninclosed land, such person should, on conviction thereof, forfeit and pay any sum not exceeding twenty pounds; and provision is by the said act now in recital made with respect to the penalties or forfeitures thereby imposed, and the recovery and application thereof: And whereas by an act of Parliament passed in the seventeenth year of the reign of her present Majesty, intituled "An act to extend and continue an act of the twelfth year of her present Majesty to prevent the spreading of contagious or infectious disorders amongst sheep, cattle, or other animals," it was enacted, that any person bringing or attempting to bring for sale any horse or any other animal into any market, fair, or other open or public place where animals are commonly exposed for sale, knowing such horse or other animal to be infected with or labouring under the disease called glanders, and any person turning out, keeping, or depasturing any horse or other animal infected with or labouring under such disease in or upon any forest, chase, wood, moor, marsh, heath, common, waste land, open field, road side, or other undivided or uninclosed land, should, on conviction of any such offence, forfeit and pay any sum not exceeding twenty pounds; and it was declared and enacted, that the said act herein first recited should be read and construed as if the now reciting enactment were incorporated therein, and all the provisions of the said first recited act with respect to the penalties or forfeitures thereby imposed, and the recovery and application thereof, should be applicable accordingly; and the said first-recited act, as extended by the act now in recital, was continued until the first day of September one thousand eight hundred and fifty-six, or, if parliament was then sitting, until the end of the session of parliament: And whereas the said several acts herein-before recited were, by an act passed in the twentieth year of the reign of her present Majesty, further continued until the first day of August one thousand eight hundred and fifty-seven, and to the end of the then next session of Parliament, and whereas it is expedient that the said several acts should be extended and further continued: Be it therefore enacted by the Queen's most excellent Majesty, by and with the advice and consent of the Lords spiritual and temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

I. From and after the *passing of this act* any person exposing or bringing or attempting to expose or bring any horse, ox, bull, cow, calf, or other horned cattle, sheep, lamb, or other animal into any market, fair, or other open or public place where animals are commonly exposed for sale, knowing such horse, ox, bull, cow, calf, or other horned cattle, sheep, lamb, or other animal to be infected with or labouring under the diseases called glanders, pleuro-pneumonia, sheep pox, variola ovina, any or either of them, or any other contagious or infectious disorder; and any person turning out, keeping, or depasturing any horse, ox, bull, cow, calf, or other horned cattle, sheep, lamb, or other animal infected with or labouring under the said diseases, any or either of them, or any other contagious or infectious disorder, in or upon any forest, chase, wood, moor, marsh, heath, common, waste land, open field, road side, or other undivided or uninclosed land, shall, on conviction of any such offence, forfeit and pay any sum not exceeding twenty pounds; and the said acts respectively herein-before recited shall continue in force and be read and construed as if this enactment were incorporated therein, and all the provisions of the said acts respectively with respect to the penalties and forfeitures thereby imposed, and the recovery and application thereof, shall be applicable accordingly.

DRILLING OF ROOT CROPS.

All lands intended for fallow crops should be broken up in a deep furrow after harvest by the strength of three or four horses. It is most essential that a deep furrow raises and exposes to atmospheric vicissitudes a quantity of earth for the use of the succeeding cultivation. During April and May, the land is wrought and cleaned by the usual processes of the plough, harrow, roller, and grubber. Being pulverized, cleaned of weeds and stones, the ridglets are formed 27 or 28 inches apart by a heavy deep furrow of the swing plough, drawn by two powerful horses and guided by a skilful ploughman. One furrow is sufficient, and must be deep and wide; the horses walk well asunder, and for that purpose the main whipple-tree is 5 feet in length, stretching over two drills in width. The farmyard dung lying in a heap in a corner of the field or in the adjoining lane, is spread in the hollows of the ridglets at the rate of 16 to 20 loads of one-horse carts, the condition being thoroughly moist, half-rotted, with the fermentation progressing and not extinguished. The ridglets are immediately split by the swing plough and reversed over the dung, the right-hand horse walking in the furrow and the left-hand one travelling on the top of the second drill which the main tree allows, being 5 feet in length, and stretching over two ridglets. In returning, the horses walk in the furrows of two drills apart, the plough moving in the intervening hollow, and throws a heavy furrow of earth over the right-hand drills which covers the dung from both sides with furrows of soil. The seed is sown among this fresh earth by rutting coulters that penetrate into the ridglet, and deposit the seeds deeply among the fresh-stirred soil. The drills are rolled by a cast-iron roll of about 6 cwt. in weight. All these processes are done simultaneously on large farms, and as quickly in succession on small extents of ground in cultivation.

Potatoes are sown in the same preparation, the sets being deposited in the hollows of the drills 9 inches, and pressed into position among the dung by the foot of the person who plants the sets and who moves forward for the purpose. The drills are formed, split and reversed, rolled, as above described.

Beetroot is grown in the same way; the seeds being deposited on the ridglets by hand dibble, with two seeds in a hole that are four inches apart, or are sown by coulters of machines that have barrels and cups for the purpose.

In the case of auxiliary and artificial manures of every kind, ridglets are formed as before in 27 inches apart, by means of a heavy furrow of the swing plough, on which the manure and seed in mixture are sown by Hornsby's drop drill, which deposits a bulb of materials at the distance of 9 inches as the plants stand for a crop, and thereby saves the quantity that is deposited in a continuous stream. The coulters of this machine split the drills very deeply and place the manure and seed among fresh soil, which is a vast advantage beyond drilling on the flat ground, where the materials are deposited in the dry and parched upper soil from which every moisture has been evaporated. It is of the very last importance that the turnip seed is deposited among fresh tilth, and in earth newly stirred and moist; and that the roll be applied immediately on the sown seeds, which acts as a lock and key, retaining the moisture, preventing evaporation, and making a level surface to prevent the entrance of drought. The retention of winter moisture in the land for summer use constitutes the grand secret of turnip growing in Britain, more especially in the south of England, where rains are scarce and dews are none, and renders the safety of the crop very precarious. In Scotland and North of England the attention is directed to that point, though rains and dews are copious and frequent in the dilution.

Experience has shown that with intervals below 26 or 27 inches the land cannot be fully wrought and cleaned by the horse-hoe, and that upon this operation very much depends of the benefit which the soil receives from green crops. On flat ground the process is not so complete as with hollows in which the implement works, and the earth is moved about without disturbing or overlaying the plants. The superiority of this width of interval is fully confirmed.—J. D.

THE BATH AND WEST OF ENGLAND AGRICULTURAL SOCIETY.

MEETING AT NEWTON.

In this, its second dynasty, the West of England Society availeth much. And deservedly so too. There are very few Institutions of the kind better managed; and some of even higher pretensions not as well. The great secret of this success is, that the leading members and directors of the association pull well together. In place of bickering and squabbling with each other, and going, like the tyro's team, all ways at once, everyone resolutely applies himself to the furtherance of that object he has thus volunteered to attain. This, of course, cannot be without its effect. It is not only those intimately connected with its uses that now evince an interest in the West of England Society. All classes show their desire to support it, and to regard it as the one great organ of their common good. It is not merely landlord and tenant who offer their services and suggestions. The clergy are almost as thoroughly identified with its proceedings. At this very time a strong movement is being made in the West to establish the education of the middle classes on a better, and something like a properly-recognized system. The question is just about to be entertained by both our Universities; its development or origin so far having been entrusted to the West of England Society. In fact, as Lord Courtney, the President of the year, said, and well said, at the dinner, their Body "had come to be regarded with confidence by the country." On every grade has its influence been felt—in every quarter are its uses apparent. From all we have seen and heard of it for some years past, we must repeat, that it availeth much.

This meeting at Newton affords only further testimony of the character and position the Society has reached in this, the era of its regeneration. With but one drawback, it was a most successful meeting. As an Institution having Agriculture for its first and chief care, it has long been something far beyond a merely local gathering; at the same time that it is pre-eminently the representative of the West Country. We bring here into a focus the neat, high-bred, but petite North Devon, contrasting with his big younger brother from the fat lands of Somerset. We compare him yet again with the mild-eyed, wide-spreading Shorthorn, the towering Hereford, or the less known West Ham. The area of the Bath and West of England is always sure to embrace some of the best of these breeds; and with these, Leicesters from the west, to vie with the Cotswolds from higher up, now so surely asserting their right to a name and a reputation. In all these classes the Newton show was generally pronounced to be very good. In some of them more than usually so. Of Leicester sheep, for instance, the Society has never before commanded so good an entry. Indeed, although chiefly confined to its own members, the exhibition of Leicester rams would do credit to many a national meeting. If not, perhaps, quite so finely bred as they are in some parts, Mr. George Turner's and Mr. Bodley's sheep have the undeniable stamp of flocks most carefully and judiciously cultivated. The one unanimous verdict was that they were most admirable, and at the same time most *useful* animals; and if such an advertisement does not lead to good lettings hereafter, we can only say that we know of no so legitimate a one. It would be unfair to omit in our commendation of these classes some notice of Mr. Buller's ewes. Time here, too, appears to have done much to perfect a sort that, however superior it may have been so far in the north, appears to thrive almost as kindly in the south.

Next to the Leicesters in the Sheep classes, came the Cotswolds, of which there were some few very good specimens. Many of the most successful breeders did not show, and by those who did it was admitted that they were keeping back their best sheep for Salisbury; when it is threatened there will be a most extraordinary and decisive display of this sort—fast growing into fashion as it is. Of what were sent to Newton, Mr. Beale Brown had, as usual, some capital ewes—three out of the five in his first prize pen having had twin lambs this season. Mr. Tombs, Mr. Handy, and Mr. Ruck were also, it will be found, successful exhibitors. Still we fancy, although within their own range, the Cotswolds might have been somewhat better even than they were. The Downs are never very numerous at this Society's shows; and the horned sheep we have seen altogether much better represented, though Mr. Danger's rams were good square animals, with horns that alone should be worth all the money the judges awarded them.

Taking, then, the sweep of the West of England's dominion, we find the Cotswold sheep at one end of its territory and the Leicester at the other. It is very much the same with the two breeds of cattle for which its festivals are more especially famous. These are the Devons and the Shorthorns. Without the former of these, indeed, the stock show would be lacking its great feature. There was no such want at Newton. Whether the pure North Devon be going out of repute or not —and we confess we should be very sorry to see it— there has seldom been a better lot of Devon bulls than were to be found on this occasion. Confining ourselves to the meetings of the West, we should say it was the very best entry since the revival of the Society. The judges commended the whole of the first class of aged bulls; and we think they might have been a little more liberal with the next one or two. Mr. George Turner's prize in the second class is a wonderfully even—*fed* beast we had almost said. He illustrates in a very striking degree how well and closely the Devons make flesh, while his quality is just about the best that can be. If the North Devon had only a little more size we really question whether there would be anything superior to him, after all. The neighbouring breeders of Somersetshire have attempted this by transplanting him to their richer pastures, and certainly with some success. The men of Devon, however, became at once indignant at any such liberty being taken, and for a year or two, as may be remembered, the Turners and Quartleys refused to show against strangers. To their credit be it recorded that they have very wisely conquered this prejudice; and now Mr. Turner of Devonshire takes one premium, and Mr. Hole of Somersetshire another. This is as it should be. Or we might have been ranking some of our famous breeders with some of our famous implement makers, who think it quite enough to once get to the top of the tree, and to say they have been there. The Somersetshire breeders, such as Messrs. Corner, Farthing, and Fouracre, quite held their own; although in the two classes selected by the judges for general commendation, "the aged bulls" and "the heifers in milk or calf," the premiums were all kept at home. As a pretty almost "fancy" cow, such as gentlemen are now dotting about their parks in place of deer, and so forth, Mr. Buller's second prize heifer is a very picture.

Mr. Stratton of course furnished the chief attractions in the Short-horn classes. He is, indeed, becoming more and more a remarkable man in this way, and has just published a book on his favourite pursuit. The argument he deduces here is very striking. His work is simply nothing more than a list of prizes he has taken as a breeder and exhibiter of Short-horns. These come to no less than four hundred in number, and in amount to some three thousand pounds, awarded during a career extending over some fourteen years.

The cow classes, and it must be admitted almost entirely to this gentleman's support, were by far the best. His first prize here, second in her class at Chelmsford last year, is a capital, broad, roomy cow —about as good a specimen as you would wish to see— with both size and quality to recommend her. The second prize cow was a much nearer contest, with one of Mr. Jonas Webb's breed, which Lady Pigot had the spirit to send all the way from Cambridgeshire. As it was, she was *highly commended*, while we could have wished her Ladyship more decided success. As one of the Judges told us, "so very near was it, that had I known the other was Stratton's, I should have given it against him;" and Mr. Stratton himself openly admitted that he could not have complained had the award been so adjusted. Still the heifers in milk or in calf were thought to be better than the cows; the same herd again being first and second. Our great objection against them would be, that like the Devon bulls and many others, they looked too well. If we had not been assured that animals here had bred this season, we should put them down as going straight to the butcher. They were certainly quite fit for him.

The Society seems to be getting alive to the necessity of some close supervision on this subject. A veterinary surgeon was especially retained to examine the different animals, and to pronounce whether, after all the pampering and forcing they had enjoyed, they were really fit for breeding purposes. Mr. Browne did, we believe, disqualify one or two. It is a difficult thing, though, to declare a cow is not in a state fit to breed from, when she has had a calf of her year. At the same time, with the hot-house system in practice, it is quite a possibility. The abuse, however, goes beyond this. The produce of some of these over-fed animals have often been found to be useless. And it is of this our different Societies have to be careful. What a contradiction it is to put the stamp of approval on a beast as the best of a breeding-show, that has been positively manufactured by a process which makes it fitted for anything but breeding.

In the mixed classes, the South Devons or South Hams—much the same sort—showed better now they have not a class to themselves; Mr. Rendell exhibiting one or two very good cows. There were also a few Herefords, of which Mr. Hewer's prize bull, General, was the best. He is an immense animal; of extraordinary weight, which has told terribly on his legs. We never saw such knees; like nothing more than the toes of an alderman who has "lived not wisely, but too well."

A pretty but not large show of pigs completes the stock list. The large breed were all Berkshire; and the small chiefly remarkable for the re-appearance of the Fisher Hobbs' Improved Essex in great force. Mr. Turner seems particularly partial to the sort, and we do not wonder at it. They are like his own Devons, so sightly, and of such quality, and so subject to the same commentary—" It's a pity there's not a little more of them." If a good big horse is better than a good little one, we are afraid it is the same with a really good pig.

And talking of horses. It is a very short time since, some two or three years after its re-establishment, the West of England, like some other Societies, was quite in despair as to ever getting any show of horses. Two or three ragged draught horses, an Exmoor pony, and an Arab stallion, went far, if we recollect aright, to make up the horse entries at Bath. Within a few years we have a truly good show at Newton. Two or three fair prize cart mares; the first and second very good—Mr. Miles' black Lincoln mare, in our humble opinion, for choice. There were a far better lot of hunting mares, and some young stock for the chase or the road, even better still. Mr. Watson, of Dorsley, had the call here with some very promising stock by the Bishop of Romford's Cob. His three-year-old colt disputed with the Devon bull and the Short-horn heifer the centre of attraction. One of the judges from the North of England fell in love with him at first sight, and an offer of two hundred was, it is said, refused. This colt unites great power and substance, with an immense deal of style and fashion in his appearance. Like many of the Bishop's get, he is in colour a light chesnut, which with a plainish head must be rather against him. Mr. Gapper had also some neat young ones by Bowstring; and Mr. Northcote as gay and handsome a filly by Young Harkaway, as a man need wish to see. Then there was, too, a kind of miniature model of a horse in the Exmoor prize pony; and a capital cross, shown by Mr. Watson, of an improved cart colt, between a Suffolk stallion and a West of England draught mare. The judges thought him only a little too good: he moved too well, and was hardly hairy enough about the heel, although it was very evident he was worth more than the first and second prize colts put together.

So far so good. We have already said that the Newton meeting had one drawback. It was simply that the implement exhibition was not equal to that of stock. Some of our great firms would not enter, or at least would not send their wares. The Society would not agree to their conditions, which we believe came very much to this:—that for the future, at local meetings—that is at all but the Royal Agricultural Society's—there shall be reports from judges rather than prizes; or only prizes in each year for certain entries, as our great implement makers may decree. The argument for this course is, that the trials are only half trials, or at best but imperfect and unsatisfactory. The Council of the West of England Society not seeing the matter exactly in this light, refuse to be dictated to; and the great implement makers don't come. We should be the last in the world to advise anything like obstinacy, or blind adhesion to doing anything merely because it had been done so before. At the same time we think the Society quite right in maintaining its own dignity, while we are by no means so sure but that the course it is persevering in is the right one. The trials it is urged are not sufficient—the test taken of an implement is not enough. Perhaps not. But what is the fact? The trials now are much closer. The judges are much better up to their work; and the award in every way bears more the stamp of worth and character than it could have done years ago. And yet to this very hour you will find our great implement makers placarding their stands with "The first prize for this at Bristol, or Exeter, or Lewes," or some place half forgotten ere now. In this age of progression what we want to know is, how do they stand by this? Whether there is anybody approaching them? Or whether it is still all Ransome, Garrett, Howard, Shuttleworth and Co.? If it is, they will most deservedly continue to rank as high as they have done. If it is not all so, they will quite as deservedly be placed only second to some new man who has surpassed them. There is not a fairer, better, or more conscientious judge than Mr. Caldwell, just elected—and with every credit to his fellows—as one of the Council of the Royal Agricultural Society of England. This gentleman was one of the judges at Newton, and in that capacity returned thanks for himself and the other judges, at the dinner. The purport of his speech was the strongest possible condemnation of the course of conduct pursued by our great implement-makers. His advice was, that if they could do without the Society, the Society should do without them; that the West of England was coming, day by day, more and more to supply its own wants; that the Society itself could make little men into big men; that the big ones were already afraid of the rising men—and so on. We must add—not as our own, but as the commentary of the meeting on all this—that Mr. Caldwell was cheered and recheered at almost every sentence; and that amongst the many good and well-known men of Devon, his was the speech of the evening. Honestly, we never saw a more significant or unanimous expression of public feeling.

As it was, one leading firm made a large entry, but did not send anything; while another had a steam engine at work in the yard, "for exhibition, but not for competition!"—A simple absurdity — a self-contradiction!—a sort of half-advertisement, calculated to leave quite as bad an impression as a good one. Not for competition! That is for sale and not for test. How a man with a really good machine can put himself in so equivocal a position we really cannot understand. Two years ago this very House had as severe and as successful a trial as could have been wished at Carlisle. We will undertake to say Messrs. Caldwell, Reade, and Co. would have given them a good one at Newton. Quite probably, too—we say it on due consideration—they might have won. And here they rest on the very doubtful ground of "not for competition."

However willing, it would be impossible this week to enter on any critical dissection of the Implement Department. We must so leave the prize list to speak for itself. In justice, though, let us at once record that, in addition to those members residing within the limits of the Society, the following firms manfully supported the meeting:—James, Leadenhall-street, London; Bentall, Heybridge, Maldon, Essex; Busby, Newton-le-Willows, York; Boby, Bury, Suffolk; Cooper, Ipswich; Lyons, Finsbury; Holmes and Son, Norwich; Pridmore, Leicester; Samuelson, Banbury; Smith and Ashby, Stamford; Turner, Ipswich; Smith, Kettering; Whitmee, Fenchurch-buildings, London; Humphries, Pershore; Hart, Wantage; Eaton, Thorpeton; Richmond and Chandler, Salford; Dray and Co., Swan-lane, London; Coleman, Chelmsford; Fisher, Thrapston; Sawney, Beverley; and Hill and Smith, Brierly, Stafford. "The sensation" amongst all these was Fowler's steam-plough, which was employed during the week in breaking up some grass land on the Plymouth side of the town. A further improvement is this season observable in the increased simplicity with which the anchorage is self-adjusted, so as to be continually opposite its work. The performance excited a great deal of curiosity, and the accession of shillings to the treasury of the Society must have been very considerable. The ploughing was of course subject to a good deal of criticism, not altogether of a complimentary nature. The fact is, the work was by no means so neat or sightly as we have known it; this unfavourable appearance being increased by the long grass, which it was not possible to cover in. Mr. Fowler explained that the furrow would have been cut cleaner by a mere shifting of the mould-board. On a public occasion like this, however, the natural rejoinder would be—Why was it not shifted accordingly?

As with this second prize list, the report of the dinner must tell its own story. Like almost everything at Newton, it was a most agreeable part of the proceedings. Lord Courtenay made a very good president; every one of the speakers who followed him went equally straight to his point; and all was well over before any one began to feel the slightest tedium or weariness. What a secret this! But more than this. A word here to the Royal and other Societies. There was a good cold dinner, for which we paid 4s. 6d. a ticket; very fair wine, with drinkable light claret at 7s. a bottle, in which you might honour every toast in a bumper; good ventilation, and ready attendance. The Society dined over 400 people with every comfort and satisfaction, and at a charge to their own funds of £15! Here is a moral for the Dinner, or Finance Committee in Hanover-square.

Newton—the centre of some of the most beautiful scenery in the kingdom, with hospitable sons and lovely daughters—with attraction on attraction to tempt the stranger here and there—the only complaint of the critic is, that it should have been so brief a meeting, or, that so pleasant a business has not more often to be enacted.

PRIZES FOR CATTLE, &c.

DEVONS.

JUDGES: J. Wills, South Petherwyn, Cornwall.
R. Cooke, Tiverton, Devon.
T. Miller, Sherborne, Dorset.

STEWARDS: J. Fry, Woodgate, Somerset.
M. Farrant, Growing, Devon.
H. G. Moysey, Bathealton Court, Wellington, Somerset.

CLASS I.—Bulls above three years old on the 1st of June, 1857.

First prize of gold medal to Mr. John Bodley, of Stockley Pomeroy, Crediton, Devon.

Second prize of silver medal to Mr. James Davy, of Fletton Barton, South Molton, Devon.

The whole of this class commended.

CLASS II.—Bulls not exceeding three years old on the 1st of June, 1857.

First prize of £12 to Mr. George Turner, of Barton, Exeter, Devon.

Second prize of £5 to Mr. James Hole, of Knowle House, Dunster, Somerset.

Highly commended—Mrs. Anstey's bull.

CLASS III.—Bulls not exceeding two years old on the 1st of June, 1857.

First prize of £10 to Mr. Richard Corner, of Torweston, Williton, Somerset.

Second prize of £5 to Mr. Walter Farthing, of Stowey Court, Bridgwater.

Third prize of £3 to Mr. Jas. Davy.

CLASS IV.—Cows in calf, or in milk, having had a calf within six months preceding the first day of exhibition.

First prize of £8 to Mr. Walter Farthing.

Second prize of £4 to Mr. T. W. Fouracre, of Durston, Taunton, Somerset.

Commended—Mr. Webber's cow and Mr. Buller's cow.

CLASS V.—Heifers in calf, or in milk, not exceeding three years old on the 1st of June, 1857.

First prize of £8 to Mr. Thomas Webber, of Halberton Court, Tiverton, Devon.

Second prize of £4 to Mr. J. W. Buller, M.P., of the Downes, Crediton, Devon.

The whole of this class commended.

CLASS VI.—Pair of Heifers, not exceeding two years old on the 1st of June, 1857, belonging to the same owner.

First prize of £8 to Mr. J. W. Buller.

Second prize of £4 to Mr. Thomas Strong, of Dunchideock Farm, Exeter, Devon.

SHORTHORNS.

JUDGES: J. Booth, Cotham, Newark, Notts.
H. Trethewy, Grampound, Cornwall.
E. Little, Lanhill, Chippenham, Wilts.

CLASS VIII.—Bulls above three years old on the 1st of June, 1857.

First prize of gold medal to Mr. William Jefferys, of Maiden Bradley, Frome, Somerset.

Second prize of silver medal to Mr. William Hewer, of Sevenhampton, Highworth.

CLASS IX.—Bulls not exceeding three years old on the 1st of June, 1857.

First prize of £12 to Mr. T. B. Miles, of Langford, Bristol.

Second prize of £5 to Mr. Jno. Bulteel, of Flete, Ermebridge, Devon.

Highly commended—Mr. Fowle's bull.

CLASS X.—Bulls not exceeding two years old on the 1st of June, 1857.

First prize of £10 to Mr. Richard Stratton, of Broad Hinton, Swindon, Wilts.

Second prize of £5 to Mr. Richard Stratton.

Commended—Mr. Widdicomb's bull.

CLASS XI.—Cows in calf, or in milk, having had a calf within six months next preceding the first day of the Exhibition.

First prize of £8 to Mr. Richard Stratton.

Second prize of £4 to Mr. Richard Stratton.

Highly commended—Lady Pigot's cow.

CLASS XII.—Heifers in calf, or in milk, not exceeding three years old on the 1st of June, 1857.

First prize of £8 to Mr. Richard Stratton.

Second prize of £4 to Mr. Richard Stratton.

CLASS XIII.—Pair of heifers, not exceeding two years old on the 1st of June, 1857, belonging to the same owner.

First prize of £8 to Mr. Richard Stratton.

Second prize of £4 to Mr. William Hewer.

HEREFORDS, OR CATTLE OF ANY OTHER PURE BREED.

JUDGES: J. Booth, Cotham, Newark, Notts.
H. Trethewy, Grampound, Cornwall.
E. Little, Lanhill, Chippenham, Wilts.

CLASS XV.—Bulls above three years old on the 1st of June, 1857.

First prize of gold medal to Mr. John E. H. Ewer, jun., of Vern House, Marden, Hereford (Hereford).

Second prize of silver medal to Mr. John Adams, of Moor Farm, Newhouse, Ivybridge, Devon (South Ham).

CLASS XVI.—Bulls not exceeding three years old on the 1st June, 1857.

First prize of £12, to Mr. J. E. L. Hewer, jun., of Vern House, Marden, Hereford (Hereford).

Second prize of £5, to Mr. W. C. Coles, Yewtree Close, Yeovil, Somerset (Hereford).

CLASS XVII.—Bulls not exceeding two years old on the 1st June, 1857.

First prize of £10, to Mr. John Feaver, Westcamel, Ilchester, Somerset (Hereford).

Second prize of £5, to J. E. L. Hewer, jun. (Hereford).

Commended—Mr. Duder's South Devon bull.

CLASS XVIII.—Six Cows in Calf, or in Milk, having had a Calf within six months next preceding the first day of the Exhibition.

First prize of £8, to Mrs. E. Palmer, of Ilchester, Somerset (Hereford).

Second prize of £4, to Mr. T. B. Brown, of Hampen Andoversford, Cheltenham, Gloucester (Hereford).

Commended—Mr. Rendell's South Devon cows (two).

CLASS XIX.—Heifers in Calf, or in Milk, not exceeding three years old on the 1st June, 1857.

First prize of £8, to Mr. William James, of Mapowder, Blandford, Dorset (Hereford).

Second prize of £4, to Mr. William James (Hereford).

SHEEP.

LEICESTERS OR LONG-WOOLLED.

(Not qualified to compete as Cotswold.)

JUDGES:—W. Sanday, Holme Pierrepont, Notts.
J. Druce, Eynsham, Oxon.
W. Wippell, Rudway, Thorverton, Devon.

CLASS XXII.—Yearling Rams.

First prize of £6, to Mr. George Turner, of Barton, Exeter, Devon.

Second prize of £4, to Mr. George Turner.

Third prize of £2, to Mr. John Bodley, of Stockley Pomeroy, Devon.

Commended—Mr. Radmore's, Mr. J. W. Buller's, and Mr. J. Bodley's rams.

CLASS XXIII.—Rams of any other age.

First prize of silver medal, to Mr. John Bodley.

Second prize of bronze medal, to Mr. George Turner.

Commended—Mr. J. B. Corner's, Mr. Potter's, Mr. Partridge's, and Mr. Bodley's rams.

CLASS XXIV.—Pens of five Ewes.

The prize of a silver medal to Mr. J. W. Buller.

Highly commended—Mr. Partridge's ewes.

CLASS XXV.—Pens of five two-teeth Ewes.

First prize of £5, to Mr. John Salter, of Peverston, Collumpton, Devon.

Second prize of £3, to Mr. J. W. Buller.

Third prize of £2, to Mr. Francis Doble, of Holcombe Barton, Wellington, Somersetshire.

COTSWOLDS.

JUDGES.—W. Sanday, Holme Pierrepont, Notts.
J. Druce, Eynsham, Oxon.
W. Wippell, Rudway, Thorverton, Devon.

CLASS XXVI.—Yearling Rams.

First prize of £5, to John King Tombs, of Langford, Gloucester.

Second prize of £3, to Mr. Edward Handy, of Sierford, Cheltenham, Gloucester.

CLASS XXVII.—Rams of any other age.

First prize of silver medal, to Mr. Thomas B. Brown, of Hampen Andoversford.

Second prize of bronze medal, to Mr. Edmund Ruck, of Castle-hill, Cricklade, Wilts.

Commended—Mr. Veale Brown's rams.

CLASS XXVIII.—Pen of five Ewes.

The prize of a silver medal, to Mr. Thomas B. Brown.

CLASS XXIX.—Pens of five two-teeth Ewes.

First prize of £5, to Mr. John K. Tombs, of Langford Lechlade, Gloucestershire.

Second prize of £3, to Mr. Thomas B. Brown.

SOUTHDOWNS.

JUDGES.—W. W. Gibbs, Kittisford, Somerset.
H. Fookes, Whitechurch, Dorset.
J. Whitaker, Bratton-Westbury, Wilts.

CLASS XXXII.—Yearling Rams.

First prize of £5, to Mr. John Moore, of Littlecott Farm, Pewsey, Wilts.

Second prize of £3, to Mr. John Moore.

CLASS XXXIV.—Pens of five Ewes.

The prize of a silver medal to Mr. William Lucas, of East Coker, Yeovil, Somerset.

Highly commended—Mr. R. K. King's ewes.

CLASS XXXV.—Pens of five two-teeth Ewes.

First prize of £5, to Mr. William Lucas.

Second prize of £3, to Mr. R. K. M. King, of Walford, Taunton, Somersetshire.

ALL OTHER DOWNS,

(Not qualified to compete as Southdowns.)

CLASS XXXVI.—Yearling Rams.

First prize of £4, to Mr. John Moore (Down).

Second prize of £2, to Mr. George Harbin, of Newton House, Yeovil, Somerset (Hampshire Down).

CLASS XXXVII.—Rams of any other age.

First prize of silver medal to Mr. George Harbin (Hampshire Down).

Second prize of bronze medal to Mr. George Harbin (Hampshire Down).

CLASS XXXVIII.—Pens of five Ewes.

The prize of a silver medal, to Mr. George Harbin (Hampshire Down).

CLASS XXXIX.—Pens of five two-teeth Ewes.

First prize of £4, to Mr. John Moore (Down).

Second prize of £2, to Mr. George Harbin (Hampshire Down).

The whole of this class commended.

SOMERSET AND DORSET HORNS.

JUDGES.—W. Sanday, Holme Pierrepont, Notts.
J. Druce, Eynsham, Oxon.
W. Wippell, Rudway, Thorverton, Devon.

CLASS XL.—Yearling Rams.

First prize of £5, to Mr. Thomas Danger, of Huntstile, Bridgewater, Somerset.

Second prize of £3, to Mr. Thomas Danger.

CLASS XLI.—Rams of any other age.

The prize of a silver medal, to Mr. Robert Templeman, of North Perrott, Crewkerne, Somerset.

CLASS XLII.—Pens of five Ewes.

The prize of a silver medal, to Mr. Robert Templeman.

CLASS XLIII.—Pens of five two-teeth Ewes.

First prize of £5, to Mr. Thomas Danger.

Second prize of £3, to Mr. Robert Templeman.

MOUNTAIN SHEEP.

JUDGES.—W. Sanday, Holme Pierrepont, Notts.
J. Druce, Eynsham, Oxon.
W. Wippell, Rudway, Thorverton, Devon.

CLASS XLIV.—Rams of any age.

First prize of £4, to Mr. James Quartly, of Molland House, South Molton, Devon.

Second prize of £3, to Mr. Petherick Bunt, of Willshead, Exford, Devon.

Class XLV.—Pens of five Ewes of any age.

First prize of £4, to James Quartly.

Second prize of £2, to Sir Thomas Dyke Acland, Bart., M.P.

Commended—Sir T. D. Ackland's ewes.

HORSES.

Judges.—J. Booth, Cotham, Newark, Notts.
H. Trethewy, Grampound, Cornwall.
E. Little, Lunhill, Chippenham, Wilts.

For Agricultural Purposes.

Class XLVI.—Mares in-foal, or with foals at their sides.

First prize of £10, to the Rev. J. G. Coppleston, of Offwell Rectory, Honiton, Devon.

Second prize of £5, to Mr. T. B. Miles, of Langford, Bristol, Somerset.

Class XLVII.—Two-year-old Colts.

First prize of £20, to Mr. Henry Hitchcock, of Chilterne All Saints, Heytesbury, Wilts.

Second prize of £5, to Mr. Isaac Humphry, of East Lambrook, South Petheron, Somerset.

Class XLVIII.—Two-year-old Fillies.

First prize of £5, to Mr. John Anthony, of Yealmpton Mills, Yealmpton, Devon.

Class XLIX.—Yearling Colts or Fillies.

First prize of £5, to Mr. Thomas Searell, of Bellamarsh, Chudleigh, Devon, for riding purposes.

For Riding Purposes.

Class L.—Mares in-foal, or with foals at their sides, for

First prize of £5, to Mr. Richard Watson, of Dorseley, Totnes, Devon.

Second prize of £3, to Mr. Francis Coaker, of Marldon, Totnes, Devon.

The whole of this class highly commended.

Class LI.—Two or three-year-old Fillies.

First prize of £5, to Mr. Richard Watson, for filly by Bishop of Romford's Cob.

Second prize of £3, to Mr. H. M. Northcote, of Hatherleigh, Devon, for filly by Young Harkaway.

Class LII.—Yearling Colts or Fillies.

First prize of £5, to Mr. William Gapper, of Duddlestone, Taunton, Somerset, for colt by Bowstring.

Second prize of £3, to Mr. H. M. Northcote, for colt by Bishop of Romford's Cob.

Commended—Mr. Copplestone's Champion colt.

Class LIII.—Two or three-year-old Colts or Geldings.

First prize of silver medal, to Mr. R. H. Watson, for colt by Bishop of Romford's Cob.

Second prize of bronze medal, to Mr. Edward Elliott, of Hollowcombe, Gymebridge, Devon, for colt by Rainbow.

Commended—Mr. Gapper's Bowstring colt.

PONIES.

Class LIV. — Mare Ponies of any breed, not exceeding 13 hands high.

First prize of £4, to Mr. William Nosworthy, of Ford Manaton, Moreton Hampstead, Devon (for Exmoor).

Second prize of £2, to Mr. William Furneaux, of South Brent, Devon (for Exmoor).

PIGS.

(LARGE BREED.)

Judges.—W. W. Gibbs, Kittisford, Somerset.
H. Fookes, Whitchurch, Dorset.
J. Whitaker, Bratton-Westbury, Wilts.

Class LV.—Boars, not exceeding two years old on the 1st January, 1857.

First prize of £4, to Mr. John K. Tombs.

Second prize of £2, to Mr. William Hewer.

Commended—Mr. Hewer's boar.

Class LVI.—Breeding Sows, in farrow, or that have farrowed within four months of the first day of exhibition.

First prize of £4, to Mr. William Hewer.

Second prize of £2, to Mr. R. N. Grenville, Butleigh, Glastonbury, Somerset.

The whole of this class commended.

Class LVII.—Pens of three breeding Sows, not exceeding nine months old on the 1st June, 1857.

First prize of £3, to Mr. William Hewer.

Second prize of £2, to Mr. R. N. Grenville.

SMALL BREED.

Class LVIII.—Boars not exceeding two years old on the 1st January, 1857.

First prize of £4, to Mr. George Turner.

Second prize of £2, to Mr. W. L. Brailey, of Corfe Farm, Barnstaple, Devon.

Highly commended—Mr. Parson's white Ducie boar.

Class LIX.—Breeding Sows in farrow, or that have farrowed within four months of the first day of the Exhibition.

First prize of £4, to the Rev. G. F. Hodson, of North Petherton, Bridgwater, Somerset.

Second Prize of £2 to Mr. George Turner.

Highly commended—Mr. Cornish's Leicester sow.

Commended—Mr. Brailey's sow.

Class LX.—Pens of three breeding Sows, not exceeding nine months old on the 1st June, 1857.

First prize of £3, to Mr. George Turner.

Second prize of £2, to Mrs. E. Palmer, of Ilchester, Somerset.

EXTRA STOCK.

Judges.—J. Booth, Cotham, Newark, Notts.
H. Trethewy, Grampound, Cornwall.
E. Little, Lauhill, Chippenham, Wilts.

The prize of £2, to Mr. William Rendell, Kingston Staverton, Devon, for his South Devon Heifer.

The prize of £2, to Mr. William Jackson, Bullaton Hennock, for his entire Pack Horse.

HIGHLY COMMENDED.

Mr. Richard H. Watson's half-bred Colt.

COMMENDED.

Mr. W. Lovering's small-breed sow.
Mr. J. Rendell's South Devon fat cow.
Mr. J. Tyrell's Guernsey cow and calf.
Mr. G. Thorne's North Devon heifer calf.
Mr. G. S. Poole's cart mare and foal.
Mr. G. S. Poole's hunting gelding.

PRIZES FOR IMPLEMENTS.

Judges.—H. B. Calwell, Hilborowe Hall, Brandon, Norfolk.
C. S. Read, Stoke Ferry, Brandon, Norfolk.
T. H. Barker, Pusy, Farringdon, Berks.
W. Chalcraft, Bromshill House, Liphook, Hants.

Engineers.—Mr. Gooch, of the South Devon Railway.
Mr. Easton, Jun., of London.

For the best plough for general purposes, 1*l.* 10s., to Messrs. J. and R. Wright, Sandford, Devon; and 1*l.* 10s. to Mr. John Eddy, Kennford, Exeter, Devon.

For the best subsoil plough, 3*l.*, to Mr. E. H. Bentall, Heybridge, Essex.

For the best turnwrest plough, which will efficiently turn the furrow against the hill, 3*l.*, to Mr. John Eddy, Kennford, Exeter.

For the best cultivator, grubber, and scarifier (wide), 1*l.*, to Mr. E. H. Bentall, Heybridge, Maldon, Essex; and 1*l.* to R. Coleman, Chelmsford.

For the best ditto (narrow), 2*l.*, to Mr. R. Coleman, Chelmsford, Essex.

For the best scarifier for light land soil, 1*l.*, to Mr. R. Collins, Trent, Somerset.

For the best pair of drags, 1*l.*, to Mr. John Eddy, Kennford, Exeter.

For the best set of harrows, 10s., to Mr. John Eddy, Kennford, Exeter, Devon; and 10s. to Messrs. A. and T. Fry, Bristol.

For the best set of seed harrows, 1*l.*, to Mr. James Comins, Southmolton.

For the best clod crusher or pulverizer, 2*l.*, to Mr. John Eddy, Kennford, Exeter, Devon.

For the best corn drill, 5*l.*, to Messrs. Holmes and Sons, Norwich.

Second ditto, 2*l.*, to Mr. J. L. Bowhay, Modbury.

For the best corn drill for small occupations, in hilly districts, 5*l.*, to Messrs. Holmes and Sons, Norwich.

Second ditto, 2*l.*, Mr. J. L. Bowhay, Modbury.

For the best turnip and mangold wurtzel drill, for ridge or flat, depositing manure with the seed, 5*l.*, to Messrs. Reeves, Bratton, Westbury, Wilts.

Second ditto, 2*l*., Messrs. Holmes and Sons, Norwich.

For the best general drill, capable of distributing at pleasure liquid manure with the seed, 5*l*., to Messrs. Reeves, Bratton, Westbury, Wilts.

For the best general manure distributor, 5*l*., to Messrs. Holmes and Sons, Norwich.

Second best, 2*l*., to Messrs. Reeves, Bratton, Westbury, Wilts.

For the best horse hoe for green crops on the ridge and flat, 1*l*., to Mr. H. Carson, Warminster.

For the best ditto on steep hill-sides, specially adapted to work horizontally along the side of the hill, 2*l*., to Mr. H. Carson, Warminster.

For the best machine for setting out turnips on the ridge or flat preparatory to singling, 3*l*., to Mr. J. Eaton, Thrapstone.

For the best hand machine for filling up vacancies in drilled green crops, 1*l*., to Mr. W. C. Cambridge, Bristol.

For the best reaping machine, 5*l*., to Mr. J. L. Bowhay, Modbury.

Second ditto, 2*l*., Mr. J. L. Bowhay, Modbury.

For the most efficient horse rake for collecting hay or corn, having a mode of delivery more or less self-acting, 2*l*, to Mr. B. J. Webber, Newton Abbott.

For the most economical and practically useful portable steam engine, not exceeding eight-horse power, 5*l*., to Mr. Oliver Maggs, Wincanton, Somerset.

For the portable combined steam thrashing machine, which shall most perfectly prepare the sample for market, 10*l*, to Messrs. Humphries, Pershore, Worcester.

For the simplest and most practically useful portable combined steam thrashing machine, not requiring more than six-horse power, 5*l*., to Messrs. Humphries, Pershore, Worcester.

For the simplest and most practically useful portable thrashing machine, with riddle and straw-shaker, not requiring more than three-and-a-half-horse power, when worked independently of its horse gear, 5*l*., to Messrs. Brinsmead, Great Torrington, Devon.

For the best portable four-horse gear, adapted for driving thrashing machines, 3*l*., to Mr. Webber, of Newton Abbott.

For the best machine for stamping seed out of flax, 2*l*., to Messrs. Brinsmead, Great Torrington, Devon.

For the best machine for scutching flax, 3*l*., to Messrs. Brinsmead, Great Torrington, Devon.

For the best adaptation of the thrashing machine for shelling clover, 2*l*., to Messrs. Brinsmead, Great Torrington, Devon.

For the best winnowing machine, which shall be also convertible into a simple blower, 3*l*., to Mr. J. Eaton, Thrapston, Northampton.

For the best one-horse cart for general purposes, 2*l*., to Messrs. Milford and Son, Thorverton.

For the best two horse waggon, 2*l*., to Messrs. Milford and Son, Thorverton.

For the best chaff-cutter, worked by horse or steam power, 3*l*., to Mr. James Cornes, Barbridge, Nantwich, Cheshire.

For the best chaff-cutter, worked by hand, 2*l*., to Mr. James Cornes, Barbridge, Cheshire.

For the best machine for grating or pulping roots, 2*l*., to E. N. Bentall, Heybridge, Maldon.

For the best turnip-cutter, 1*l*., to Mr. H. Carson, Warminster, Wilts.

For the best corn and pulse-bruiser, worked by horse or steam power, 2*l*., to Messrs. Turner, Ipswich, Suffolk.

For the best corn and pulse-crusher, worked by hand, 1*l*., to Mr. Woods, Stowmarket, Suffolk.

For the best oil-cake crusher, for every description of cake, 1*l*., to Messrs. Smith and Ashby, Stamford, Lincoln.

For the best gorse-bruiser, 1*l*., to Messrs. Smith and Ashby, Stamford, Lincoln.

For the best and most economical steaming apparatus, for preparing food for cattle, pigs, &c., 2*l*., to Messrs. Richmond and Chandler, Salford, Manchester, and Liverpool.

For the best churn, 1*l*., to the Rev. E. A. Ferryman, Wadenhoe, Oundle Rectory, Northampton, exhibited by Mr. W. L. Fisher, of Thrapston.

For the best cheese-press, 1*l*., to Mr. H. Carson, Warminster, Wilts.

For the best apple-mill, calculated to crush the pips also, 2*l*., to Messrs. Wightman and Denning, Chard.

For the best cooking apparatus for farm kitchens, 2*l*., to Mr. John Gliddon, Williton, Somerset.

For the best specimen of substantial fencing, calculated to resist cattle of all kinds, constructed either of iron, wood, or a combination of both materials, 2*l*., to Messrs. Hill and Smith, Brierly Hill, Dudley, Stafford.

For a registered weighing-machine and sack-lifter combined, Mr. W. Sawney, Beverley, York.

For a flour-mill, 10s., to Messrs. Whitmee and Co., London.

For a combined crushing and grinding-mill, 3*l*., to Messrs. E. R. and F. Turner, Ipswich, Suffolk.

For a patent scarifier for light lands, to be worked with one, two, or three horses, 1*l*., to Mr. R. Collins, Trent, Sherborne.

For a hay collector, Mr. Samuel Rowsell, Buckland Saint Mary, Chard.

CERTIFICATE OF MERIT.

To Mr. R. Coleman, Chelmsford, Essex, for a patent potato digger.

To Mr. W. Cambridge, Bristol, for a patent self-relieving chain harrow.

To Mr. John Heard, Sandford, for an irrigation gutter-plough.

To Messrs. Dray and Co., London, for a wrought-iron steel bar for plough point.

To Mr. Samuel Lock, of Kingskerswill, Devon, for a one-horse cart, and particularly for excellency of workmanship, and attention to details.

To Mr. Wm. Busby, Newton-le-Willows, Bedale, York, for a one-horse cart.

To Mr. E. Taylor, junr., East Coker, Somerset, for a rick cover.

To Messrs. Brown and Son, Lyme Regis, Dorset, for an improved cooking apparatus.

To Mr. Thomas Bigg, London, for a new and improved sheep-dipping apparatus on wheels.

To Messrs. James and Malcolm, London, for a cattle weighing machine.

To Mr. John C. Stark, Torquay, for various articles of general usefulness.

To Mr. Samuel Pearse, Exeter, for a patent endless-band saw.

To Mr. John Westcott, Thorverton, for double-cottage bee-hives.

To Mr. R. Boby, Bury St. Edmonds, Suffolk, for a patent corn-screen.

HIGHLY COMMENDED.

Messrs. Holmes and Son's corn drill for small occupations.

Mr. George Milford's two-horse waggon.

Messrs. Wightman and Denning's cheese press.

Messrs. Hart, Gibbons, and Co.'s combined thrashing machine.

Mr. W. Cambridge's combined thrashing, riddling, and winnowing machine.

Messrs. Smith and Ashby's chaff-cutter.

Mr. H. Carson's chaff-cutter.

COMMENDED.

Mr. H. Carson's wrought-iron plough for heavy lands and deep ploughing.

Mr. G. Hole's plough for general purposes.

Mr. J. Pitt's light subsoil plough.

Messrs. Hart, Gibbons, and Co.'s Berkshire cultivator with seven shares.

Mr. E. H. Bentall's patent broadshare and subsoil plough.

Mr. C. Jewell's pair of iron drags.

Mr. J. Eddy's economical prize seed and manure drill, for ridge or flat.

Mr. E. H. Bentall's patent three-beamed harrow.

Mr. H. Carson's registered self-cleaning cross cut wheel roller, and clod crusher.

Messrs. A. and T. Fry's improved corn dressing machine.

Messrs. R. and J. Wright's horse-hoe, for the ridge, flat, or hill side.

Mr. W. L. Fisher's oilcake crusher.

Mr. H. Carson's chaff-cutter.

Mr. R. Boby's winnowing machine.

Mr. J. C. Stark's cooking apparatus.

Mr. W. C. Cambridge's portable steam engine.

Mr. W. C. Cambridge's combined thrashing machine.

Mr. H. Beare's three-and-a-half horse-power portable thrashing machines.

Messrs. Burrow and Page's winnowing machine.

THE DINNER

took place on Thursday, June 4th, at three o'clock; Lord Courtenay, as President, in the chair, supported by a company of between four and five hundred, including Lord Portman, Sir J. Y. Buller, Bart., M.P., L. V. Palk, Esq., M.P., Sir E. Baker, Bart., S. T. Kekewich, Esq., R. Durant, Esq., the Hon. W. W. Addington, the Hon. and Rev. C. L. Courtenay, the Rev. J. L. Brereton, W. M. Praed, Esq., Dr. Miller, T. D. Acland, Esq., J. Sillifant, Esq., W. Hole, Esq., Rev. J. C. James, Captain Maxwell, and Messrs. Knollys, Pitman, Gillet, John Gray, &c. &c.

After the customary loyal toasts, Sir J. Y. Buller gave the health of the Chairman, who, in responding, said I am not inferior to any in warm and active interest for agricultural pursuits; and especially am I interested in the proceedings of this society, because I feel that it is one which is calculated to do good—not merely to this county only, to which I am of course especially attached, but to all the counties in the immediate neighbourhood, which have many points in common, by promoting the competition and facilitating the diffusion of that information which is essential to the improvement of every branch of human industry. (Cheers.) And I confess, gentlemen, that it has been an especial gratification to me, in the position which I have had the honour of being placed, to be brought into contact with so many gentlemen of neighbouring counties, with whom I had previously not the pleasure of being associated or acquainted. (Hear, hear.) I feel that we in Devonshire will benefit very much by receiving friends from Somersetshire, Dorsetshire, and Cornwall, and by a communication of ideas promote the common object we have in view. I cannot help, in one sentence, congratulating you as members and friends of this society, upon its advancing prosperity, and upon the proof which this year's exhibition gives (as did also former exhibitions) that it is regarded with confidence by the agriculturists of this part of England, who look upon it as an instrument of good, are disposed to wish it good speed, and to promote, in every possible way, its interests and its prosperity. When we know that the number of exibitors of implements and stock is larger than on former occasions, and when we see the increased number of people who have visited us on this occasion, we cannot doubt but that this society stands well in the judgment and opinion of agriculturists and the public. I would take leave to allude to another movement, with which the society has so far connected itself as to pass a resolution of sanction and approval—I mean that movement which is now set on foot for the purpose of improving, through the medium of examinations, education in those schools in which many of us as agriculturists are more especially interested. Gentlemen, it is probably known to most of you that my valued and talented friend and relation, Lord Ebrington, with that liberal and enlightened philanthropy which characterises his public conduct, two years ago placed at the disposal of the public, out of his own funds, prizes for the purpose of competition by the commercial schools of this district. That answered well, produced much competition, and resulted in the successful attainment of prizes by the deserving son of a farmer at no great distance from Exeter. The hint was taken up, and a committee at Exeter, composed of gentlemen of various positions in society—the farmers of the neighbourhood, the tradesmen, and the magistrates, all acting together—have agreed to try an extension of that plan, and I heartily hope (because I believe it is an object of essential importance to the agriculturists of this county) it may answer. The plan, let me add, of instituting examinations, through the medium of a local committee, contemplates no interference with the independence either of the conductor of the agricultural school or with the parent who sends his children there. It contemplates no system of government inspection; it contemplates no inquisitorial investigation into the way in which the school is managed. Such a proceeding would be unworthy of its promoters, and would be calculated to defeat the object it has in view. But it contemplates such a system of examination as by showing the world the most intelligent, and the best trained boys, will at the same time show who are the best qualified to train others. The plan in question will not interfere with master or parent, but it will, I trust, gradually raise the tone of education throughout the country; gradually give a sound and, I hope, a more practical character to much of that education which the middle-class now receive, and thus exercise a beneficial influence over generations to come. I think the society in passing an approving resolution of that scheme has acted quite within its province as being interested in everything which benefits the agricultural community.

Mr. Sillifant gave the " Local Committee ;" responded to by Mr. Wall; Mr. Brereton " The Labourer," and Mr. Knollys The Judges."

Mr. Caldwell, in responding, said he should only make a few remarks, in which, perhaps, he might be induced to venture a little farther than merely returning thanks at a jovial dinner. He might look on the present as a dinner of agriculturists who had met to hear something, and who had come to that meeting to see and learn, and to buy those instruments, most conducive to the benefit of their land. The way to get, over what he had to say was, first to return thanks on behalf of the field-judges for the manner in which their healths had been drunk, and at the same time on behalf of the judges to thank the stewards who attended them: the judges also desired him to return thanks to Messrs. Froude, Gooch, and Belfield, for the provision of an efficient dynamometer to test the ploughs. In reference to the remark made by the chairman relative to the good done by the society for Devonshire, he might remark that Devonshire was well represented in the present exhibition. The prizes for "the general purposes" ploughs and the turnwrest ploughs, which latter were very requisite here, were both obtained by Devonshire manufacturers. This meeting proved that there were efficient men in the west as well as in the east. But he would say no more on that point, but would give the result of his experience in the yard, for the good of the society and for the benefit of the farmers of the district. The judges had had a very hard task, but they had seen some very good implements. On first entering the show-yard he saw on a shed " Garrett and Son," and asked for their machinery; but they had none in the yard. He could not tell them why, but he knew why. He could assure them that Garrett was a leading man: he was of his (the speaker's) own neighbourhood: he had bought implements of him, and should have liked to have seen him at the Newton Show; but it appeared to him (Mr. Caldwell) that the " big " makers had begun to be afraid of the Devonshire men (laughter and cheers). One of the large manufacturers had come—one that he would willingly trust in. He had a very nice engine; and they sought to have it tried. They asked him (the exhibitor) if he was not going to run his engine; he said No. He (Mr. Caldwell) would go no further with the private conversation; he thought its drift would be observable from what he had said (Hear, hear). There were five or six leading manufacturers who would not come into the west; he could only put it down to Devon being too good for them (laughter). He certainly thought that the implement yard was a proof of the mechanical ability of the Devon men; but when they came to try the steam-engines, which were the production of men of the west, it was found they could not get up the steam. It was complained that the coal was wretched. Well, they tried four engines, and they took six hours and a-half in getting up the steam. But the judges procured an old engine of Hornsby's, and with the same coal they got up the steam in forty-two minutes. This seemed to be the weak part of the exhibition; and when the great manufacturers stayed away, and prizes were awarded to engines which were inferior to others in the kingdom, the judges betrayed the interests of the public if they did not make it plain that the prizes were only a mark of comparative merit, and not the badge of perfection. The next thing the judges went to see was the finishing thrashing machines. He was no believer in them. He was told, after they had tried with barley three—two of which made mistakes—and if the big makers had come they would have made exactly the same mistakes—that the barley was grown. The barley, after it came off the straw, had to be separated. The judges, before they awarded the prizes to these implements, tested the samples furnished by them through a dressing-machine, and showed it to the manufacturers, and asked them what they thought the corn-dealers in Norwich and Ipswich markets would say of it?—it was very nearly one-third of dirt when it went through. There had been a great improvement in ploughs and scarifiers; and his opinion, was, that it was better at a quiet dinner to speak a report that the reporters could take down, than to wait for twelve months for the sake of having a good novel. He liked to see the report published, but he did not like to wait a year for it. However, he hoped it would be understood that he entertained great respect for the Professor and the writers in the Journal. At meetings like theirs they might come and see the best implements, but they would not see the "combination manufacturers." Who were these "combination" men? Such societies as the Bath and West of England Society has made little men into big men, by giving prizes for the machines they turned out. These big men then turned on the agricultural societies, defied them, and said, "We will have a show of our own. But we also could combine; we even here in South Devon, might beat them in their own implements." He (the speaker) must say these South Devon exhibitors had a great deal of energy, and, what was at the bottom of most Englishmen—more "pluck" than there was in any other fellows in the world (laughter). A great many small men had shown implements in which there was a good deal of merit. There were some good chaff-cutters exhibited, but there being no dynamometer to test them, the judges had been obliged to do as well as they could with their arms. Many men present were stronger men than he was, and the force they could have brought to bear would have been more effectual in the trial; but he thought he should not be far wrong if he advised them to buy the machinery that had had prizes awarded to them. They had had a little examination into the working of a steam plough on a hilly country. He must congratulate the Bath and West of England Society for being so liberal as to let Mr. Fowler try the principle by working that plough; the persons who had gone to see it had paid their shilling, and he hoped the same would be for the benefit of the society. After eulogising Mr. Gray, and again returning thanks for the judges, Mr. Caldwell concluded by proposing the healths of the Stewards of the Society, begging to convey to those gentlemen the thanks of the judges for the able, kind, and competent assistance they had rendered them (applause).

Mr. MOYSEY, the junior steward, returned thanks.

Mr. PALK, M.P., gave "Lord Portman and the Royal Agricultural Society of England."

His LORDSHIP, in reply, said, I have seen for the last fifty years great progress in the farming of this country. I have seen that which has given me great delight. I have seen a steady advance—not a jumping over the fence—not a trying to get on to the end of the next field—but an anxious desire to try and find out that which is to pay; for, after all, it is of no use for a farmer, or for a manufacturer, to employ capital and labour, unless they gain for themselves a return, and confer a benefit on the whole of the community. And unless that which is for the good of the whole community is made to pay by the man who is to do the work, he will not continue to do it. Many men have cried down high farming—I cry down low farming; for I am quite sure of this, that you may err on the side of excess as well as on the side of too little. It is perfectly right that it is the duty of the man who has the capital to try experiments for the advantage and information of those who are not able to go to the expense of making these improvements; but it is the duty of those men to inform their neighbours not only of their success, but also of their failures, by which a benefit is conferred upon other members of the community. That is the great use of the Royal Agricultural Society of England—it is, by its association with men of all parties in the kingdom, that information is diffused. The Bath and West of England Society is the oldest society in the kingdom. If the members of the society look back to the old Journals, they will find a great deal worth reading; and if our Journal Committee have been a little late, I would recommend to the members that if they cannot get a new Journal they should turn over the pages of the old ones, and I am certain they will find a good deal of useful information there. A good deal of feeling was evinced when this society was formed. It was said that we were going to put an end to smaller societies. It was said that the Royal Agricultural Society and Bath and West of England Societies were going to swallow up all the other societies that were to be found in this kingdom. These people, however, soon found out that we had no such gormandizing propensities—(laughter)—and that we were, in point of fact, endeavouring to assist them in every possible way. We have found out that our best allies are the local societies. They make their improvements, bring their cattle together, find out which are the best specimens, and extend their benefit from west to east, and the small men help the great men, and the great men in their turn help the small men; and when we are embarked in the same vessel, then we shall not want the *Great Eastern* to take us over the waves, but we can say "It is not the *Great Eastern* or the *Great Western*, but the *Great Britain* is to swim."

Mr. KEKEWICH gave the "Railways"; and the CHAIRMAN "the next Meeting"—at Cardiff—after which the party broke up.

THE ANNUAL MEETING

was held in a tent in the show-yard, on Thursday, Lord COURTENAY presiding. Among those present were Lord Portman, Sir J. T. B. Duckworth, Messrs. J. Sillifant, Voelcker, J. Gould, T. Hussey, J. Creed, C. Gordon, jun., J. E. Dymond, T. Wills, John Brown (Bridgewater),—Hussey, jun., John Gray, Jonathan Gray, Edward Douding, J. Belfield, Danger, R. K. M. King, Cotterell, Farrant, Adder, Gillett, H. G. Moysey, Fry, J. D. Davy, Knollys, Hole, Amory, Bullock, T. E. Grenville, G. Poole, &c.

The Secretary (Mr. HENRY ST. JOHN MAULE) read the annual report of the society, which was as follows:

Bath and West of England Society for the Encouragement of Agriculture, Arts, Manufactures, and Commerce.

Established 1777.

Annual Meeting, Newton, 1857.

REPORT OF THE COUNCIL.

The council report the steady increase of the society, which now consists of about 93 governors, 41 life members, and 974 annual subscribers, making a total of 1,108 (since these numbers were made up a large number of new members have been added), being an addition to the society's ranks of 135 since the last meeting.

The society still continues to benefit by the indefatigable exertions of Mr. Jonathan Gray, the able director of shedding, who, in order to carry out the arrangements for the present meeting, has for some time taken up his abode in the neighbourhood of Newton.

SOUTH WALES MEETING, 1858.

A deputation has been appointed to meet at Cardiff for the purpose of inspecting the sites, and making arrangements for the meeting in South Wales. This deputation only await an official communication from the committee of that place to carry out the objects of their appointment. A communication has since been received from R. H. Williams, Esq., the chairman of the local committee, at Cardiff, together with a resolution of that committee, to the effect "That this meeting on behalf of the town and neighbourhood of Cardiff are prepared to agree to the resolution passed at the Bath and West of England Agricultural Society's meeting, at Taunton, on the 31st January, 1857."

VETERINARY INSPECTOR.

The council have engaged the services of Professor George Brown, resident veterinary surgeon of the Royal Agricultural College, Cirencester, to fill the office of veterinary inspector for the present meeting.

ESSAYS.

The council report that prizes have been offered for the following subjects :

1. Farm buildings for small farms, £20.
2. Personal experience on a farm in the West of England, £20.
3. Irrigation, £10.
4. Sheep suited to the West of England, £15.
5. Carts and waggons, £10.
6. Orchards, £10.
7. Any chemical subject calculated to assist the agriculturist, £10.
8. Sir W. Trevelyan has also placed at the disposal of the council two special prizes for essays on the economical, physical, moral, and social effects of cider, more especially with reference to its use in the rural districts of Somersetshire and other parts of the West of England, as follows : For the best and approved essay, £25 ; for the second best, £10.

THE EXHIBITION.

The entries much exceed those of any former meeting. The number of exhibitors of stock department is 120. The stock exhibited are 131 cattle, 470 sheep, 41 horses, 40 pigs ; total, 682. There are 96 exhibitors of implements and other articles. The total number of articles entered is 1,100, including eight stands of manure, and occupying a space of 2,200 feet of shedding.

The show of this year presents several features of new interest. The regulations adopted after the Tiverton meeting for simplifying the trial of implements have been brought into full play, and are found to work admirably, insuring great care and accuracy, and a thoroughly practical character in testing the work of the different implements. The excellent arrangements for exhibiting machinery in action cannot fail to have attracted the attention of visitors. It is with great satisfaction that the council refer to the invention, by a member of their own body, of a dynamometer for testing the power consumed by thrashing and other machinery, which has been found, under the supervision of Mr. Gooch, the consulting engineer, assisted by Mr. Edward Easton, to give entire satisfaction to the exhibitors and to the visitors.

RAILWAY ARRANGEMENTS.

The council are gratified to announce that the Great Western, Bristol and Exeter, Midland, and South Devon railways have again made the same liberal concessions of transit of stock and implements as on former occasions, and that the North Devon and London and South Western railways have followed their example; but they regret to add that the Eastern Counties Railway have withdrawn the privilege, and in consequence many animals have not been sent, and among others three Suffolk horses. The council feel bound to offer their special acknowledgments to the directors of several railways, and also to Mr. Dykes, of the Bristol and Exeter, and Mr. Cookshott, of the South Devon, and the other officers of those railways, for the facilities granted them on the present occasion, and for the promptitude with which every arrangement has been carried into effect.

NON-COMPETING EXHIBITORS.

The council have made a further addition to the show by setting apart a portion of the yard for the use of those manufacturers who wished to exhibit machinery in motion, but decline to compete for prizes.

FOREIGN CATTLE.

The council report a communication from Robert Bruce, Esq., the French and Belgian Consul at Bristol, offering to exhibit Dutch cattle at the present meeting. This addition would have been most desirable, and under ordinary circumstances the council would with pleasure receive any accession to its exhibition by foreign cattle, either as competing for prizes or as extra stock, but in consequence of the epidemic now prevailing on the continent, as a matter of precaution declined to receive them into the yard on the present occasion. They, however, trust that in future no such impediment may arise to a similar extension of the exhibition.

ELECTION OF PRESIDENT AND COUNCIL, 1857-58.

The Council suggest that Lord Courtenay be re-elected as president, and requested to continue in office till a successor be appointed; that W. P. Carew, Esq., M.P., Sir M. Lopes, Bart., M.P., Col. Buck, J. Tyrrell, Esq., and Mr. Williams, of Roath Court, Cardiff, be added to the list of vice-presidents. The following gentlemen retire by rotation :—

EASTERN DIVISION.

Elected.	Name.	Address.
1855	Andrews, G. H., ...	Rimpton, Sherborne.
1855	Bailward, John, ...	Horsington, Wincanton.
1855	Bullock, George, ...	North Coker, Yeovil.
1855	Gillett, W. E., ...	Taunton.
1855	Gee, Thomas, ...	Upton-on-Severn.
1855	Hancock, J. D., ...	Halse, Taunton.
1855	Lush, Joseph, ...	Evercreech.
1855	Morle, Thomas B., ...	Cannington, Bridgwater.
1855	Moysey, H. G., ...	Bathealton, Wiveliscombe.
1855	Pitman, Samuel, ...	Rumwell Lodge, Taunton.
1855	Poole, Gabriel, ...	Bridgwater.
1855	Baker, R., ...	Compton Martin.

WESTERN DIVISION.

1855	Acland, T. D.,........	Sprydoncote, Exeter.
1855	Belfield, John,........	Park Field, Torquay.
1855	Farrant, M., ...	Growing, Collumpton.
1855	Froude, W., ...	Dartington, Totnes.
1855	Gould, J., ...	Poltimore, Exeter.
1855	Hussey, Thomas,......	Waybrook, Exeter.
1855	Michelmore, T., jun., ..	Totnes.
1855	Newman, T., ...	Mamhead, Exeter.
1855	Porter, William,......	Hembury Fort, Honiton.
1855	Sillifant, John, ...	Coombe, Copplestone.
1855	Troyte, A. H. D., ...	Huntsham, Tiverton.
1855	Wippell, William, ...	Rudway, Thorverton.

In the Eastern Division the following gentlemen have consented to be submitted to the meeting for election: W. Thompson, of Wrington, Bath, and R. Smith, of Exmoor.

In the Western Division the following gentlemen have consented to be submitted to the meeting for election in the room of Sir M. Lopes, Bath, M.P., and W. P. Carew, Esq., M.P., placed on the list of vice-presidents, and the rest of the retiring gentlemen are recommended for re-election: R. H. Clarke, of Bridwell; R. May, of Rewe; J. L. Oldrieve, of Yealmpton; and J. Hooper, of Chayford. That the treasurers (R. Badcock and R. Dymond, Esqrs.) be *ex-officio* members of the council.

CHEMICAL DEPARTMENT.

The council report that lectures have been delivered by Professor Voelcker, at Bath, Exeter, Yeovil, Barnstaple, Plymouth, and Newton, on various subjects connected with agricultural chemistry. The council have requested the professor to undertake a careful examination of the different kinds of lime and shell sand used in the West of England, and to write a report upon them, founded on careful analysis. The professor confidently reckons on the assistance of the proprietors of the several lime-kilns for the sending in samples, and upon the members of the society who use the lime or sand for furnishing data founded on their own experience as to the effect of these manures upon their land. It is probable, also, that the society will derive much benefit from further investigations into the physical geography and climate of this district, undertaken in the most praiseworthy spirit by Mr. N. Whitley, and deserving of all encouragement from the society.

MIDDLE-CLASS EDUCATION.

This subject, which was brought under the consideration of the society by Lord Ebrington, in October, 1855, has again engaged the attention of the council in consequence of proceedings which originated at Exeter in January of the present year. The plan was laid before the council in February last, in the form of a correspondence with the Committee of Her Majesty's Privy Council on Education, intimating the fact that two of Her Majesty's Inspectors, connected with this district, had been instructed to give their assistance to the scheme. The prizes being offered to boys educated with a view to employments in agriculture, arts, manufactures, and commerce in the three counties of Somerset, Devon, and Cornwall, and being therefore closely connected with the objects and district of this society, received the sanction of the council at a meeting (summoned by special notice), in the form of the following resolutions: "That the council have heard with satisfaction that the Committee of Council on Education have consented to co-operate with a committee formed at Exeter, on the 7th of January last, for the purpose of establishing a system of examination and prizes for boys educated in the West of England with a view to employments in agriculture, arts, manufactures, and commerce." "That the council fully assent to the opinion that skill in business generally is best acquired by practice, and that the best preparation for practical life is a good general education." "That the co-operation of some independent examiners with a local committee appears well calculated to secure confidence in the results of the examinations." "That the council learn with satisfaction that in the present and more extended scheme, as well as in that laid before the council by Lord Ebrington, in October, 1855, several members of this society are taking an active part, and they beg to place at the disposal of the committee an honorary life-membership of this society, to be competed for as a prize. The council cannot but feel gratified by the fact that a plan, originating in this district, and promoted by so many of its own members, has been brought under the consideration of the University of Oxford, in the form of a draft-statute submitted by the council of that learned body to its convocation, and that similar measures are understood to be in progress at Cambridge."

Lord COURTENAY was duly re-elected president by show of hands, and the above gentlemen elected and re-elected as recommended.

IMPLEMENTS, &c. EXHIBITED.

The following is a summary of the chief attractions upon which the Exhibitors mainly depended in furnishing their several stands.

REEVES, R. and J., Bratton, Wilts.—Patent four-row, three-row, and other liquid manure drills, new and patent drills for drilling dry manure with seed. These last-named implements deliver manure by means of a revolving cylinder with portions of screws on the Archimedian principle: they also keep the manure in an agitated state, and will not clog by the use even of damp manure, as is the case with other implements of the like kind. The quantity to be delivered is varied by means of a slide passing over and outside the apertures. Also a dry manure distributor for top-dressing with guano, soot, &c., and constructed to distribute from two to 100 bushels per acre.

IMPEY, R., Street, Somerset.—Combined winnowing machine and blower, simple and effective in its working, and requiring very little power in its use. It has a powerful blast, and perfectly separates the different qualities of corn. Blowing machines, steel tooth-rake (Howard's); Coleman's cultivators, chain-harrows, and manure and seed-drill.

DRAY and Co., Swan-lane, London.—An "alliance" plough. The improvements in this plough consist in the points of the share, which is formed of a wrought-iron steeled bar, sliding in a dovetail. This may be projected to any length required, and is secured in its place by an eccentric wedge; by this arrangement the plough will work through the most stubborn or rocky soil. The front of this plough is also made much heavier than in ordinary ploughs, thus avoiding much vibration, and securing lightness of draught. General-purpose and subsoil ploughs, self-cleaning, lateral-toothed grubbers, diagonal and light seed harrows, three-tine horse-hoe, winnowing and blowing machine, American churns, light two-horse waggon, small chaff-cutter so constructed that the feed remains stationary during the time the knives pass through it; corn and pulse bruiser, iron field-gates (tubular), and corn-dressing machine, with tippet screen and registered cliver or hariff separator. The latter can be affixed to either old or new machines, and is driven by the same handle and at the same time as the machine to which it is attached.

STARK, J. C., Torquay, Devon.—Fixed and portable cooking stoves for farm, kitchen, and cottage use; a miscellaneous collection of articles used for dairy and other domestic purposes, chaff cutters, winnowing and screening machines, hurdles, gates, pig and poultry troughs, field and garden tools, and stable fittings.

Eddy, J., Kenford, Exeter.—A collection of ploughs, deep and general purpose, also turnwrest and two-wheel iron swing ploughs, horse rakes, iron harrows, cider and cheese presses, subsoil pulverizer, and rotary screening machine.

Cockey and Sons, Frome, Somerset.—Apparatus for heating cheese rooms, cheese press, cast-iron pumps, iron field rollers, turnip cutters, chaff cutters, and haymaking machine.

Bentall, E. N., Heybridge, Maldon, Essex.—Broadshare and subsoil ploughs, patent root pulper, drags, four and three-beamed harrows, and chaff cutter.

Carson, H., Warminster, Wilts.—Iron ploughs, seven-share scarifier or cultivator, roller, clod crusher, horse hoes, chaff cutters, hand turnip cutters (Moody's patent), corn and oilcake crushers, cheese presses, cross-cut wheel roller, and harrow, grubber, or scarifier.

Garton and Jarvis, Exeter.—Stoves for purposes of cooking and scalding milk, cattle hurdles, and butter churns.

Cambridge, C., Bristol.—Portable steam-engine and thrashing machines, American and double-blast winnowing machines, press wheel-rollers and self-cleansing clod crushers, chain harrows, iron ploughs of various kinds, bean and oat mills, chaff cutters, horse rakes, grass and seed machine, and a machine for filling up vacancies in drilled green crops.

Busby, Newton-le-Willows, York.—One-horse carts, light, general purpose, and strong ploughs; horse hoes, heavy, light, and expanding; and turnip tailer, to top and tail turnips.

Burrows and Page, Morchard Bishop, Devon.—Thrashing, shaking, and riddling machine, and winnowing machine.

Bigg, Thos., Dover-road, London.—Moveable sheep-dipping apparatus, on wheels, with cradle in which to place the sheep, and to prevent their struggling during washing.

Cornes, J., Barbridge, Nantwich, Cheshire.—Chaff-cutting machines with three and two knives, and adapted either for horse or manual power.

Easton, J., Exeter, Devon.—Granite clod-crusher, or ring-roller.

Maggs, O., Bourton, Somerset.—Eight and five-horse power portable steam-engine, portable combined thrashing and winnowing-machines, chaff-cutters, and screw and lever cheese-press.

Bowhay, J. L., Modbury, Devon.—Portable combined thrashing, winnowing, dressing, and reaping-machines; corn, turnip, mangold, and grass-seed drills; turnip-cutters, seed-drills, manure-distributor, horse-power works; cheese-press, waggon and general-purpose cart; ploughs, cultivators, horse-hoes, and light and heavy harrows.

Boby, R., Bury St. Edmunds, Suffolk.—Corn-dressing machine, for blowing off the chaff, and more effectually separating the small foul seeds, dirt, thin kernels, and dross from the bulk. The screen is quite new as an invention, and mainly assists in producing a faultless sample for market or other purposes. Also a very excellent corn-screen, for separating thin and defective kernels from the bulk, and producing a more equal sample.

Brown and Son, Lyme-Regis, Dorset.—Kitchen-ranges for farm or other purposes, and a portable cattle-food steaming-apparatus.

Brown and May, Devizes, Wilts.—Portable steam-engine, and combined thrashing and winnowing-machine.

Beare, H., Tiverton, Devon.—Horse-power thrashing, shaking, and riddling machine; corn-drill, for hilly districts; general-purpose and double-moulding plough; wide and narrow cultivators; horse-rake, and horse-hoe.

Drew, R., Morchard Bishop, Devon.—Winnowing machines, fitted with additional small spiked rollers, to act on the self-feeding principle, and assisting to deposit the seed in a drawer.

Cooper, J., Ipswich, Suffolk.—Self-acting lever horse-rake, with counter-balance to each tooth separate; counter-balance lever horse rake, harrow, and fertilizer, constructed with additional side tines, so arranged as to cut in advance of each other, and thus prevent the implement becoming choked with clods, &c.

Milford, T. and Son, Thorverton, Devon.—One-horse carts, with tipping apparatus; two-horse waggons, and three-tined horse-hoe, with expanding harrows. The fore-carriage of the above waggon is made to lock under the body, and has corn lades for harvesting purposes.

Lyon, A., Finsbury, London.—Machines for pulping steamed roots or vegetables; are also made to cut raw roots for mixing with meal, &c.

Huxhams and Brown, Exeter, Devon.—Millstone runner, layer or bedstone for flour mills, and cooking apparatus with slide register closed over, complete without masonry.

Holmes and Sons, Norwich, Norfolk.—Portable steam engine; combined thrashing, shaking, and winnowing machine; manure distributor; seed and manure drills, both for ridge and flat work; small occupation corn and seed drills, Northumberland ridge drill, turnip and mangold drill, two and one-row handbarrow drills, corn-dressing and winnowing machine, and machine for filling up vacancies in turnip crops.

Jewell, C., Dawlish, Devon.—General purpose and turn-wrest ploughs, iron harrows and drags, together with an assortment of steel forks.

Sidney, R., Lambert, Bristol.—Moving five-bar furnace, and sample of portable manure, prepared from the decayed cesspoolage of Paris.

Milford, G., Thorverton, Devon.—One-horse carts, with half-rounded tires, side-spring lever to tipping apparatus, and two-horse waggons, with spring-latch tailboards.

Rowsell, S., Buckland St. Mary, Somerset.—Iron-pointed hay, corn, and stubble collectors, collection of rakes, engine for picking up stones, and fencing for horses, cattle, sheep, and lambs.

Smith and Ashby, Stamford, Lincolnshire.—Double action and reverse motion haymaking machines, steel tooth horse rake for hay, corn, couch grass, &c.; lever horse rakes, safety three and two knife chaff cutters, chaff cutter (eight inch), horse power gear works, and double action oilcake mill.

Smith, W., Kettering, Northamptonshire.—Double blasted blowing or winnowing machine, steerage horse hoes with double and single bars, and an improved sack truck.

Whitmee and Co., Fenchurch-buildings, London.—Horse or hand power corn crushers, and flour grinding mills, hand, steam, or horse power.

Wightman and Denning, Chard, Somerset.—Heavy and general purpose ploughs, field rollers, haymaking machines, horse rake and hoe, chaff machine, corn bruiser, cheese press, field gates, sack cart, and two-knife chaff cutter.

Woof, W., Weston Birt, Gloucestershire.—One-horse power plough, made to pare land to any required thickness, also applicable to removing turf.

Wright, R. and J., Sandford, Devon.—Heavy turnwrest, general purpose, and light ploughs; subsoil ploughs, chain harrows, hand drill, horse hoe for ridge, flat, or hill side; horse rake, sheep rack, iron harrows, and a two-horse draught for ploughing or harrowing.

Hart, Gibbons, and Gibbons, Wantage, Berks.—Combined portable thrashing, shaking, and winnowing machine; liquid manure or water cart, and Berkshire cultivators with seven, five, and three shares.

Humphries, E. and T., Pershore, Worcester.—Combined thrashing, shaking, and winnowing machines, and adapted also for barley horning.

Webber, B. J., Newton Abbott, Devon.—Six-horse portable steam engine, three-horse power thrashing and finishing machines, portable four horse gear, corn dressing machines, hay making machines (Smith and Ashby's), self-acting horse rakes, corn, seed, turnip, and manure drills, cider press, field roller, clod crusher, drag harrow and scarifier, iron ploughs (Howard's), harrows of various kinds (also Howard's), horse malt, and linseed mills; churns, liquid manure pumps, steaming apparatus, &c.

Dobbs, J., South Molton, Devon.—North Devon spirit level for ordinary use upon farms, with tripod stand.

Cleave, W., Chudleigh, Devon.—A plough for light land.

Hawkes, T., Taunton, Somerset.—Specimen of patented horse food.

Tuxford and Sons, Boston, Lincolnshire.—Eight and six horse power portable steam engines, with vertical cylinders, boiler in which flues and tubes are combined, the working parts enclosed within an iron house; also a combined thrashing, straw shaking, riddling, and chaff separating machine, and adapted for barley awning: this machine is fitted with extra dressing apparatus for finishing corn for market in one operation.

Turner, R. and F., Ipswich, Suffolk.—Superior roller mills for crushing linseed, oats, malt, and barley; ditto for splitting beans, chaff cutter, oil-cake breaker, and combined crushing and grinding mill: this mill is so constructed that the corn first passes between a pair of smooth rollers, by which it is thoroughly crushed; thence it descends to a small pair of mill stones, which quickly converts it into meal, and that without injury to the grinding surfaces. It can also be used as a crushing mill only.

Twose, W., Halberton, Devon.—Winnowing and haymaking machines, made to be worked with the smallest possible amount of hand-labour, and adapted for dressing all kinds of grain.

Hogg, W., Upton Pyne, Devon.—Winnowing and haymaking machines.

Polyblank, J., Newton Abbott, Devon.—Four-horse portable gear, so constructed as to render the friction roller unnecessary; and a combined thrashing, shaking, and winnowing machine, having an endless web for conveying the corn to the riddle.

Webber, J., Torquay, Devon.—Four-horse power fixed steam engine for agricultural purposes, and a steam boiler for burning lime or chalk. This implement may be used for burning lime or chalk, and producing steam with the waste heat.

Brinsmead, T., Torrington, Devon. — Portable thrashing, shaking, riddling, and blowing machine, without apparatus for finishing; it is so constructed as to enable the operator to bag the corn without the help of elevators; also a straw shaker.

Eaton, J., Thrapstone, Northampton.—One-horse cart, sheep crib, corn dressing machine, combined turnip hoe and thinners, and hand seed dibble.

Finning, W., Shrobroke, Devon.—Light two-horse waggon.

Hole, G., Kenton, Devon. — General purposes plough, scarifier, harrow, and hay turner.

Dicker, J. and W., Clayford, Devon.—Two and three-and-a-half horse power thrashing, shaking, and riddling machines, and hand flour-dressing machines.

Pitt.—Stokeinteignwhead, Devon.—Scarifier, horse hoe, chain, and light harrows, and light subsoil plough.

Coleman, Chelmsford, Essex.—Newly invented potato digger, suspended on travelling wheels; at the rear of the machine there is a revolving disc, and affixed to this are eight forked spades, that revolve over the share which passes under the tubers, throwing the potatoes clear of the drill; expanding harrows; drag harrows or cultivators (seven and five prong).

Kerslake, Exeter.—Miscellaneous articles for garden and cottage purposes, chaff cutter, plough (general purposes), pig troughs, cattle and sheep fencing, iron stable fittings, oat crusher, screening machine, and butter churn.

Parsons, G., Martock, Somerset.— Seven-horse power portable steam engine and portable combined thrashing, shaking, and winnowing machine.

Stephenson, Brothers, Plymouth.—Chaff cutters, corn crushers, turnip cutters, mincing machines, manure pumps, steel digging, dung, and hay forks, spade and draining tools, and other miscellaneous articles adapted for farm and garden use.

Gliddon, J., Taunton, Somerset.—Iron rollers or clod crushers, farm-house kitchen range, and cheese press.

Collins, R., Trent, Somerset.—Scarifier for light lands, to be worked with one, two, or three horses: the peculiarity in this implement is that it can be converted into a heavy rake for cleansing the land after harvest, as well as into a skim plough or turnip hoe; it is equally applicable across ridges as on the level.

Bonsfield, E. T., Okehampton, Devon.—Haymaking machine, one and two horse harrows, corn dressing machines, chaff cutters, oilcake breakers, wrought iron field-gate, wrought iron hurdles, cooking ranges and stoves.

Fisher, W. L., Northampton.—Horse rake, chaff machines, combined bean and oilcake mills, horse hoe with drill, one and two row ridge drills, steerage seed drill, and self-kneading lever churns.

Lane, R., Cirencester, Gloucester.—Oilcake breaking machines, one and two horse gear, chaff cutters, malt crusher, expanding hoe, cast steel hay and digging forks, potato germ extirpators, wrought iron farm buckets and sheep troughs.

Hill and Smith, Brierley-hill, Stafford.—"Premium" continuous iron fencing, and serviceable against all kinds of cattle and game, strained wire fence, wrought iron hurdles, some game-proof wrought iron entrance and field and wicket gates, wire nettings, wrought iron harrows, stall posts with ramped and ornamental tops and grooved rails for boards, iron racks and mangers, scarifiers and broad shares, iron harrows, expanding horse hoes, wrought iron barley roller, chaff cutting machines, horse-power gear, wrought iron sheep and pig troughs, vermin-proof rick stands on iron pillars, and rick stand pillars and granary crane.

Lock, S., Kingskerswill, Devon.—One-horse cart for general purposes. The principal parts of the body of this cart are made with stump mortices, and drawn together with strap plates to give additional strength.

Heard, J., Crediton, Devon.—Nine-rowed corn-drill, machine for cutting irrigation-gutters, haymaking machines with levers, oilcake mill, and hay-collector.

Pridmore and Son, Lyston, Leicester.—Winnowing machines for winnowing all kinds of corn and seed. These are manufactured upon the double-blast principle, and fitted with spike roller and wire-chaff riddle.

Pearse, S., Exeter, Devon.—Endless hand-saw (Barrett and Exall's), made to supersede the usual circular saw; economic cooking apparatus or open fire kitchen range, safety chaff-cutters, root-grater, root-pulping machine, barley hummeller, pig and poultry troughs (iron), garden chairs, wire netting, hay and pitching forks, reaping hooks, digging forks (Parkes's), roller and kibbling mills, and other miscellaneous articles for farm and gardening purposes.

Samuelson, Banbury, Oxon.—Double-action turnip cutters (Gardner's), fitted with improved cutting-plates, having a number of ledges and open slits, through which the dirt separates from the roots, and falls in front of the implement: the cutting-plates, screwed off and on at will, are adapted so as to cut and slice to any required thickness; turnip graters and slicers, combined food-preparer, the chaff-cutting and root-grating portions being so arranged as to possess the advantage of two machines, mixing the food as fast as cut; chaff-cutting machines, roller mills, linseedcake breakers, roller and malt-crushing mills, lawn-mowing machines, clod crushers and serrated roller, horse rake, haymaking machine, American floating ball washing machine, so as to submit linen to the gentle friction of a number of small balls floating in the suds; also a collection of steel digging forks, and a double-action turnip cutter, by the use of which the sizes and thicknesses of the pieces of turnip cut may be varied at will.

Richmond and Chandler, Salford, Manchester.—Economic chaff-cutting machines of several kinds, and adapted either for steam, horse, or hand power: these last-named, compact and well made, are constructed with simplicity, and can be easily managed and worked by one lad; power corn crushers, linseed mill, sack truck, and holder combined, farmers' steaming apparatus, vegetable-washing and sack-holding machines.

Sparrow, J. W., Plymouth, Devon.—Specimens of manures, consisting of superphosphate of lime (concentrated), common superphosphate of lime of commerce, calcined bones from South America, carbonized bone from France, sulphate of lime from Rouen, and highly dried and ground sugar scum.

Burnard, Lack, and Co., Plymouth, Devon.—Concentrated superphosphates of lime, common ditto, and soluble turnip manure.

Clark, D., Weston - super - Mare, Somerset.—Sample of sewage manure from the town of Weston-super-Mare.

Foster, G., Exmouth, Devon.—Concentrated superphosphate of lime and urate, corn and grass manure and superphosphate of lime of commerce.

Pontey, Roe, and Co., Plymouth, Devon.—Samples of bone manure dissolved, bone ash also dissolved, and murio-phosphate of lime.

The Western Counties and General Manure Company, Plymouth.—Bone-ash samples, also concentrated and other superphosphates of lime.

Comins, J., South Molton, Devon.—General purpose light and turn-wrest ploughs, sets of drags and harrows, various sized horse hoes, clod crusher or land presser, and a cultivator or scarifier.

James, J., Leadenhall Street, London.—Weighing machines of ten, six, three, and one cwt., set of single, double, and treble iron sheave blocks, and a treble brass ditto.

Fry, A. and T., Bristol.—Patent steam plough, worked by a 10-horse engine and windlass combined, break spring waggon, Newport cart, wrought iron liquid manure cart, press ploughs, iron horse hoes for green crops, iron four-beam diagonal harrows, clod crushers, one-horse gear for chaff machines, chaff machines for horse or hand power, root graters, winnowing machines, oat and bean mills, oilcake crusher, grass-seed distributor, one and two-row seed and manure drills, lawn-mowing machine and digging forks.

Sawney, Beverley, Yorkshire.—Corn dressing machine adapted for all kinds of grain, and can be readily altered into a simple blower. The improvement in this machine consists in the tappet screen, which gives to the corn a vertical motion, and allows the screen to be fixed at a lower angle than in ordinary use. The small seeds and other refuse are by this process more effectually separated from the marketable corn. The cliver or hariff apparatus attached consists of a revolving web of endless flannel, which receives the corn as it falls, delivering the same in a clean state for sacking. Also a combined sack lifting and weighing machine, so arranged that the sack of corn when weighed can be immediately lifted by means of a revolving handle, and removed by the same man employed in weighing the corn.

Woods, Stowmarket, Suffolk.—Mincer, for steam, water, or horse power; hand root mincer or pulper; grinding and crushing mill, for horse or steam power; crushing roller mills; horse power gear; poppy and weed extirpator; portable asphalting apparatus; and a new kind of cabinet mangle, made to close and represent a piece of furniture.

OXFORD AND BANBURY AMALGAMATED AGRICULTURAL ASSOCIATION.—The third meeting of this now enlarged society took place at Oxford on Wednesday, June 10, when the show of stock was pronounced to be the largest and best ever seen in the county since the opening meeting of the Royal Agricultural Society of England. The prize list embraced cattle, sheep, horses, and pigs, the successful exhibitors being Mr. Langston, M.P., Colonel North, M.P., and Messrs. S. Druce, J. Hutt, T. R. B. Cartwright, W. Miller, H. Middleton, J. K. Tombs, W. Hobbs, W. Smith, W. Cother, J. Rowland, W. Gillett, and his Grace the Duke of Marlborough. There was also a good show of implements, and a dinner well supported by both town and county. The chief speakers here were the Right Honourable J. W. Henley, M.P., the president, the Rev. Mr. Clutterbuck, Mr. Cother, Mr. Alderman Sadler, Colonel North, Mr. Langston, and Mr. Thomson, chairman of the Oxford Farmers' Club. In speaking to the toast of the meeting Mr. Cother said:—Some years ago he suggested the amalgamation of the two societies, and was glad to find that it had been carried out, and that the result had proved so satisfactory. At the same time, he thought they were only in an infant state, and that they ought to follow the course adopted by the Bath and West of England Society, and the Great Northern Society, and have one comprehensive society, to be called the Great Midland Central Society. They might hold their meetings at Oxford, Banbury, Birmingham, and Warwick, and allow all breeders in the kingdom to join the society; for they wanted to see the best stock that could be produced, and to have it brought as it were to their own doors; which was not only important to the breeder, but also to the consumer; for it was not every one who could find it convenient, or could afford to go to the great exhibitions. He wished to see the society put on a broader footing; that it should be thrown open to all, so that they might aid them with their subscriptions, and assist in producing the greatest quantity of meat from a given quantity of food. There was no doubt that great improvements might still be effected, and it was the duty of every man, not only to assist himself, but also his fellow-man. This society, with such help, was capable of doing great things, and he hoped that people would expand their ideas, extend the area of competition and operation, and bring about a large association, and a more successful one. He was a winner of more prizes last year than on this occasion, but he begged to remind them that he had lost a quantity of stock, and some of his best; he had, however, obtained one prize, and would endeavour another year to gain more. There had been an eating match at Paris; and he was happy to find that the epicures who had tested the prize mutton and beef by partaking of it, had decided that the Cotswold mutton was the best (laughter). Mr. Cother concluded by offering to give a prize of £5 for the best shearling got by his rams, and hoped that other breeders would do the same, and the society give a champion prize for the lot to contend for.

THE EDUCATION OF THE MIDDLE CLASSES.

Self-examination is one of the first duties impressed upon us all. We are beginning to apply the principle a little more generally. Day by day are we coming more and more to inquire how the several classes in the State really stand? How far have they progressed? Or, what means have they at their command for so doing? It is no longer the scholar alone has our care. We are gradually endeavouring to properly qualify everyone amongst us for the position he is to fill. It is not alone the University-man who prepares for his "Little go," or the Medical Student to "pass." The very Government Clerk, that a few years since became a Government Clerk merely because he knew nothing, or was fit for nothing, has now to face the ordeal of an examination as to his capabilities. Church and State, the Army and Navy, Science and the Arts, alike admit the policy of so wholesome a practice. It can be no very distant day when the "learned friend," who complacently assumes his wig and gown on the proof of having eaten so many dinners in Middle Temple Hall, will be but a bye-word and a reproach.

Education, in fact, is rapidly and widely extending its *uses* amongst us. From the highest to the lowest we are gradually striving for something better and sounder than what custom and routine have but too long sanctioned. The gentleman commoner and the farm labourer are almost alike regarded in this movement. The aim is to make more useful citizens of them, and to arm them with such knowledge and power as shall really qualify them for their several stations. In so becoming a business let us not altogether forget ourselves. The Government will, in a greater or lesser degree, take charge of the alpha and omega we have cited. The condition, the wants, and the advance of either are being perpetually discussed. In the meanwhile that vast body of the people known as the middle classes, have been suffered to continue in much the same stand-still state, without encouragement or recognition. A boy at a commercial school is still entirely at the mercy of his master. There is no one to fairly test what he has learnt. At best he may write a good hand, in which he indites the one common form of holiday letter, announcing that he is getting on uncommonly well, to the mutual satisfaction of Mr. So-and-so and himself; and that the summer vacation will commence on the eighteenth instant. Perhaps he may return decorated with the very questionable order of a prize for "good conduct"; and then he is bound apprentice, or sent farming, or engineering, or land-surveying, knowing little or nothing to begin with, and strong only in the negative recommendation of there not being much to *un*teach him.

At length we are about to remedy this. As mentioned in our report of the Newton Meeting, the West of England Society has taken up the subject; and what is more, both our Universities appear ready to support the movement. It is not too much to say that the origin and development of this proposition are almost entirely attributable to the members of a Society essentially agricultural. They have passed resolutions in favour of it, and they have embodied in the last number of their Journal a prospectus as to the manner in which the plan may be carried out. We must let our readers learn from this what the chief features of the scheme are:—

"The middle classes bear the whole cost of the education of their own children. They derive less aid from ancient endowments and from the public purse than any other branch of the community. Training colleges, certificated masters, pupil teachers, industrial schools, are in part supported by the Government, and their efficiency is secured by public examination. The standard of instruction is on every side rising, and the method of teaching made more effective. The education of the gentry and clergy, on the other hand, has engaged the prolonged and serious attention of Parliament. The public schools are tested by examinations; the colleges contend with each other in a race of open competition; even the universities themselves have been tried against the world in the examination for public appointments, and the soundness of their training has been nobly vindicated by the result. Thus the parents of boys intended for the higher professions, and the managers of schools for the poor, have every advantage in judging of the efficiency of the institutions from which they have to select instructors; but with the middle classes it is otherwise: they have no such opportunity. The parent has not the security, nor the master the honourable independence, so essential to mutual confidence and to the welfare of the scholar."

It will be seen from this that the principle is public examination, with proportionate rewards, and something, indeed, like the distinction of a degree, as conferred by the letters A.A., or Associate in Arts. The commentary of one of the inspectors of training schools, the Rev. F. Temple, himself educated in Devonshire, is not merely encouraging, but practically useful and suggestive:—"*The one thing which the middle classes want, and which they cannot get without help, is organization.* Let the schools remain self-supporting, but let the systematic action introduced by the Government into the working of elementary schools be extended to theirs; let inspectors visit and examine; let exhibitions and scholarships be founded; let first-rate teachers be distinguished; let the nation give as much money as will organize these schools into a system, and £50,000 a year would completely do it, and the middle classes can do the rest for themselves."

On the very day on which the members of the West of England Society were celebrating their meeting at Newton, the Vice-chancellor and Proctors were assembled in Congregation at Oxford, discussing "the new statute." With some opposition to conferring any such degree as that of A.A., the proposal was received with an almost unanimous expression of approval. On Wednesday the new statute was again read, and submitted to vote in Congregation, when the main provisions were carried by 81 votes to 16, and the title of "Associate in Arts" by 62 votes to 38. In short, "the Middle Class Education Scheme" has taken root, and it only now remains with the middle classes themselves to attend to and encourage its growth.

The country, we must say, appears thoroughly ripe for such a movement. It is only within these few days that we have received a pamphlet in announcement of some such a course of education being about to be tried on rather a large scale at Gnoll Castle, near Neath, in South Wales. This beautiful seat is to be enlarged and fitted up as a college, where youths of the middle rank in life may perfect themselves as engineers, agriculturists, or for the many other pursuits not exactly recognised at Oxford or Cambridge, and, of course, scarcely anywhere else. The plan is rather a grand one, but has so many good elements about it that we confess we should be very sorry to see it unsuccessfully attempted.

The agriculturist has here, again, to be consulted. It is gratifying to feel that in the west country he has been one of the chief authorities called in :—" In proposing a system of public examination, not confined to boys of one class, the promoters aim less at the advancement of any particular art or science than at the improvement of general education. This view is in accordance with the opinion of several most intelligent practical farmers, who take a very warm interest in the question."

It is, in fact, to the new number of the Journal of the Bath and West of England Society that we must refer our readers for details and particulars it would be impossible to give here. Or, perhaps, more directly to a pamphlet*—to be had for a shilling, and already at a second edition—embracing much the same material, and written by Mr. Acland. It is with an extract from one of this gentleman's letters that we may conclude a notice that is rather intended to call attention to, than to do full justice to a scheme of so much national importance, and, as we trust, of as commensurate advantage. The more we educate ourselves, the more readily shall we be to thus advance our fellows. Mr. Acland founds an argument on too well known a fact—" It cannot escape observation, that many persons in the middle ranks regard with jealousy and suspicion a Standard of Education for the poor, of which they themselves in their younger days had no experience; and that the fact of their own children deriving no benefit from the large sums expended in providing a supply of trained Masters, is to them a source of dissatisfaction."

GREAT AGRICULTURAL SHOW AT AT VIENNA.

THE CATTLE DEPARTMENT.

The show of cattle at Vienna was extremely numerous and varied in character. It comprised a great many breeds of oxen, cows, bulls, horses, sheep, and pigs. The oxen were the principal object of attraction. As a general rule, we remarked the following features in the cattle: Colour red, with white heads, backs, and bellies; long bodies; large size; rather short horns; generally low in the back, narrow in the loins and hips, high in the rump, and flat-ribbed. Otherwise, they were a good sort of stock for quality of flesh, with thick, soft, elastic hides. There were exceptions to this rule, especially amongst the Hungarian breed and its congeners, which we shall point out in detail. The weight of these cattle, at a rough average, would be, for

Bulls,	from 100 to 150	stone of 8lb.
Cows,	,, 80 to 120	,,
Oxen,	,, 100 to 180	,,

The Hungarian race is considered as the stock, or root, of the great body of cattle exhibited, and therefore attracted more attention than others. The peculiar characteristics of this race are the length of horn, and its singular expansion, some of the latter measuring from three to four feet long, and spreading from five to six feet in width, tip from tip; long legs; rather elegant structure of body; quickness of movement; fineness of muscular organization; and thinness and durability of hide. The colour is whitish grey. The old Highland longhorned white breed, now extinct, was strikingly similar to this race; so also are many of those met with in the Campagna of Rome, especially in the form and expression of their heads. This fact has given rise to the hypothesis that the Hungarian race of cattle is the parent stock, and not the *Bos urus* of Linnæus. The flesh of the Hungarian ox has an agreeable taste, and is considered very nutritious in quality. It also easily fattens, without materially deranging its peculiar symmetry; and, for labour, its comparatively quick pace renders the animal almost equal to the horse, being much steadier in draught.

The Hungarian cow yields but little milk; and it seldom lasts more than three months after the calf is weaned. About three *seitel* (three pints) per day is the ordinary yield; but what is wanting in quantity is made up in quality, the milk being very rich. To produce about 800 *mesures*, or 1,140 pints in the year, without weakening the feeding qualities of the cow, is considered a fair sample of the breed, as a milch cow. There is a slight inconvenience in the length of the horn, for labour-purposes; but this is overlooked, from the superior strength and agility of the animal. The long horns are generally indicative of being bred on the plains, which are of an amazing extent in some parts of Hungary; while the short horns and short legs in cattle as clearly show that they have been originally bred on the mountains. On the latter, the animal encounters many obstacles when in action, and is obliged to keep its body nearer the earth when feeding than though it were in the plains: long horns and long legs would not, therefore, be in harmony with nature in a mountainous country. Experience also proves, as regards the Hungarian cattle, that they pair more freely and increase more rapidly in a roving state of nature, than when reared in a condition of semi-confinement.

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* Middle Class Education. By T. D. Acland, Esq. Ridgway, Piccadilly.

The average weight of meat in the Hungarian ox is about 600lbs., the fat being estimated at 20 per cent., and the hide ordinarily weighing 70 to 74lbs. The usual period to commence working the ox, is when it is five years old. After five more years of labour, the animal is fattened in about four months, and fit for slaughter. The general cost of an ox is from £8 to £10 per head. When fat, it fetches from £12 to £15. The hide of the Hungarian ox is much esteemed by the tanners, for soles, as it wears much better than that of other breeds. Some of these animals attain an enormous size. A cow, exhibited by M. John Brauns, of Presburg, measured 7ft. 4in. round the chest, and 4ft. 9in. along the back. She was well marked in the hips; and her false ribs were beautifully developed. In quality and touch she was also very good; in fact, though only in fair condition, this cow was superior to most of the shorthorns in England. This breed is evidently well adapted for the rich and extensive plains of Hungary, being capable of enduring the extremes of heat and cold which are natural to the climate.

The Käruthen and Kräin are a similar race, if not derived from the same stock, although smaller in size, and not so long in the horn. Like many of the Hungarian breed, they have long bodies, long legs, narrow backs, and high rumps. The colour of this race is a bluish-grey or white, with occasionally a dingy black; horns long. Many of these animals measure 16 hands high, and make good working cattle. They resemble in many respects our larger Devon oxen. The weight would average, for

Bulls, from 100 to 150 stone of 8lb.
Cows, ,, 80 to 120 ,,
Oxen ,, 80 to 170 ,,

The Duxer breed are generally of a dingy black, with dun muzzles and tails; or a dark red, with blackish heads. They are a small, thick-set, and well-made animal; but, like most others in the yard, they are low in the back, narrow-hipped, and flat-ribbed. Quality of flesh very fair; hides thick, but elastic. They weigh, upon an average:

Bulls, from 70 to 80 stone of 8lb.
Cows, ,, 60 to 70 ,,
Oxen, ,, 60 to 120 ,,

The Mürzthal (Styria) race may be defined thus: The skin varies from the Hungarian whitish-grey to that of the badger; and the animal is more prized when the head, neck, and tail are of a still darker shade. The horns are much shorter than those of the Hungarians, and incline backwards. The bull is especially prized when its horns are white, and tipped with black. The head is also shorter and broader than that of the race just mentioned. This race are considered good milkers, many of the cows giving as much as 2,500 *mesures* (3,540 pints) per year. The Viennese nurses, for this reason, purchase the cows immediately after calving, and frequently give as high a price as from £18 to £20 per head; whereas the ordinary price of a cow is from £9 to £14, when not in a milking condition. The average yield of milk, however, is about 2,120 pints yearly. The cow takes the bull at two years old, and continues breeding till twelve years; the bulls are used when one year old, and at five are fattened for the market. The calves intended for veal suck for about three weeks, and are sold unfattened for about 13 kreutzers (5½d.) per lb., which causes veal to be generally of a very inferior quality. Calves for rearing are allowed to suck for about eight weeks; they are then fed three times a day, for a year, upon chopped hay, bran, and crushed oats, warmed up together. During the hot season they are allowed the run of a good pasturage, and are exposed to the sun, but carefully sheltered from cold winds. The aptitude of this race for feeding may be judged by the following data: A single beast consumes about 3,360lb. of hay, or its equivalent, to produce 120lb. of meat. The latter sells for about 48s.; the cost of food, therefore, is but a small charge upon that sum. The expense of tending the beast must, however, be added to, and the value of the manure deducted from, that amount. The oxen are employed in draught from three till eight years in the valleys, and from five till six years in the mountains: they are then fattened for the market. The price per head varies from £9 to £20, weighing nett from 450lb. to 1,000lb. The flesh is not considered so fine as that of the Hungarian breed, but it excels that of the pale-red Mariahof race; and, for labour, it is only second to the Hungarian. The hide generally weighs from 72lb. to 90lb., and the value is about 5d. per lb., calculating the price by the table which serves as a basis for the tax imposed upon the sale of meat.

The Mariahof race run generally as follows: Colour mixed grey-white and pale red, occasionally spotted with white; horns rather short, slightly yellowish, and tipped with black; the head rather short, and narrow in front; the neck somewhat large and short, but the distance from the withers to the buttock much shorter. The ox frequently weighs 900lb. when slaughtered, with 15 per cent., or nearly 140lb., of fat. The white cattle of this breed, as they give the best milk, and fatten easily, are much prized, although the blood is not considered pure: hence the Mürzthal bull is preferred, and a good produce is generally the result.

The Pinzgau (Salsbourg) breed is mostly of a dark red, with a line of white on the back, and white generally covering the belly. The head is short; white circle round the eye; muzzle white; horns about twelve inches long, and slightly turned back; neck short and thick; the withers rather narrow; and the fore-quarters much weaker than the hind, with the tail high. The expression of the animal is generally mild; and the yield of milk, though smaller in quantity than that of the two races just mentioned, is rich in quality, and much sought after. The disposition to fatten is also great; and the animal does not easily lose flesh.

The white line on the back disappears in the Zilesthal and Egerer races; and the red of the head is much darker than that of the Pinzgau. They much resemble our Devons in colour, and, like them, vary greatly in size. This is an excellent thickset and close-made race, though their defects are, rather low backs and flat ribs. The quality is good; the hides thick, soft, and elastic; and the horns short. The bulls run from 70 to 90 stone, when fat; and the cows from 54 to 70 stone. This breed has evidently had the advantage of better management in the selection of male animals for the purposes of breeding than many others at the Exhibition. The milk of this race is rich in quality, and makes good butter and cheese. The animal is reared to perfection in the rich valleys of the Ziller and Inn.

The Oberinnthalle race is of a yellowish-grey, with larger eyes than the Tyrol breeds generally have. The flesh is tender, and good in quality. The animal is not generous in fattening, but yields a large quantity of milk. It is also rapid in its growth, attaining generally in two years the same weight as the red or brown ox takes three years to do. When slaughtered, the ox gives from 500 to 800lb. of meat, and the cows from 350 to 700lb.

The relative weight of the carcases of these several races may be summed up as follows:

Lean oxen (net weight of flesh),	from	40 to 50	per cent.
Half-fed oxen, ,,	,,	50 to 60	,,
Fattened ditto, ,,	,,	70 to 80	,,

The relative quantity of fat in each is generally:

Lean oxen,	from	5 to 10	per cent.
Half-fed ditto,	,,	10 to 15	,,
Fattened ditto,	,,	20 to 25	,,

The average price of meat in Central Austria, which influences ordinarily that of a great portion of the empire, is estimated as follows:

Lean cows,	per quintal of 112lb.,	32s. to 36s.
Half-fed ditto,	,,	36s. to 42s.
Bulls, used,	,,	38s. to 44s.
Draught oxen,	,,	44s. to 50s.
Fat ditto,	,,	48s. to 52s.

The proportion of fat, in all these races, is mainly determined by the price of corn, with which they are mostly fed. When the latter is low in price, the quantity of fat in the Mürzthal and Mariahof races varies from 120 to 180lb., or about 30 per cent.; but when corn is high, the fat seldom reaches more than 90lb., or from 10 to 15 per cent. The quintal of fat (112lb.) ordinarily sells at from 50s. to 54s. The brewers are mostly the stall-feeders of cattle, having a great quantity of refuse grain from brewing.

The relative value of fodder and meat is thus estimated: To produce 112lb. of meat and fat, it requires about 3,000lb. of prepared food, such as chopped hay, &c., or its equivalent. With animals of a superior breed, which are recognized by the fineness of their skin and the smallness of their bone, it requires for the same weight of food about 2,000 to 2,400lb.; while heavy-boned and thick-skinned animals will consume as much as from 4,000 to 4,500lb. for the same weight of meat.

It was evident, throughout the whole show, that the continental breeders of cattle looked rather to the milking properties of the animal than to its disposition for making beef. Indeed, so strongly is this fact evidenced in some of the races, that the milk alone has been thought of any value, and the capacity for feeding as quite subordinate to it, or of little or no consideration.

HORSES.

In this department we were agreeably surprised to find a few animals that would not discredit Lincolnshire and Yorkshire. In most instances, however, it was evident whence the blood was obtained: it was also equally clear that it had been derived from the sire, and not from the dam. The English stallion has long been a favourite amongst the horse-breeders of Hungary; and the form, the fire, and the expression of his whole frame are unmistakeably impressed upon the best-bred horses of that country. Better results, we think, would have been obtained, had the mare also furnished her share in the crossing of the breeds; but this is a point which seems not to have struck the Hungarian breeder, nor, perhaps, those whose suggestions he has so carefully adopted.

There were certain defects, however, in most of the specimens exhibited, which may easily be accounted for. The general run of horses were nearly thorough-bred—somewhat lanky in appearance, narrow in the chest, and short in the hind-quarters. A great many of them, too, were cow-hocked. This defect generally arises from being badly fed when young—a fault most of the breeders commit throughout the Austrian Empire. In fact, they have no idea of what is called "making up" a horse; for they never give the colt a bit of corn until it is three years old, and ready, as they suppose, to begin work; whereas a feed, occasionally, of good corn would obviate in a great measure that common but highly-depreciating defect in the colt. A few specimens of cart-horses presented better features, denoting strength as well as agility in the animal; while the prices asked were exceedingly low, as compared to those demanded in England for the same class and character of horse. We ought also to remark that the horse, generally speaking, is used very tenderly in the Austrian dominions, and, if anything, is often in too fat a condition to do his work comfortably.

SHEEP.

The majority of the sheep were of the Merino breed; and some of them as pure, and as fine in wool, as the best Rambouillet race, so famed in France. This sort was first naturalized in Hungary by Maria Theresa, in 1773, though with great difficulty, as the Archbishop of Gran, after several attempts, had utterly failed in so doing. The present flocks of Hungary and Bohemia, marvellous as they are in number, are mainly the result of 325 ewes and rams imported from Spain by the Em-press. Francis I. also did a great deal to foster and improve the Merino race in his dominions, by adding some choice specimens to his establishment at Holitz. In 1811, a ram from this stock fetched as much as 12,000 florins, or £120; but since the breed has been extended, the price has fallen to the ordinary standard which obtains for other races of the same animal.

The principal object is the wool, which is of the very first character. The carcase is not regarded as much as it ought to be for the purposes of food. For six months in the year mutton is rarely eaten in Austria, which not only deprives the working classes of a highly nutritious aliment, but it is also injurious to agricultural advancement. The prejudice against mutton has simply arisen from the fact that the large breeders of sheep only look to wool; consequently the animal has been systematically kept until he is too old and tough to eat; or if it chance to find its way to the market, it is simply from the fact of its having died in a diseased or unnatural state. Hence few dream of eating mutton as we do, but look upon it with a species of distrust; beef is, therefore, the principal viand throughout Austria.

In 1801 the export of wool from Austria was 124,814 quintaux, or about 13,000,000 lbs.; and in 1850, though materially affected by the revolution of '49, it reached 32,000,000lbs. The temporary check, however, given to agriculture by the abolition of the *robott*, to which we alluded in our preceding report, has caused a considerable diminution in the number of sheep reared. Before '49, the ordinary estimate was 17,000,000 head, calculating solely by the export of wool, and giving each sheep 1½lb.; but as a considerable portion of wool is retained for home consumption, the number must be much larger than that.

Many of the large breeders are abandoning the plan of growing solely the finest wool, as the sheep is not so profitable as when a little coarser quality is grown. This is effected by a cross.

The native sheep of Hungary is much diminished since the introduction of the Merinos, but they are greatly preferred by the peasant. This race mostly abound in Transylvania and some portions of the Banat. The real Hungarian sheep is not so susceptible to atmospheric influence as the Merino, neither are they so choice in their food. The last, in fact, is what may be called a hot-house plant, for his living is altogether of a highly artificial nature. The native sheep produce a greater quantity of wool, though not so fine in quality; the meat is better in quantity and quality also. They likewise produce milk, which is sold at a good profit. The ewes of this race, when taken care of, frequently drop two lambs. The skin is the favourite clothing of the peasants; for without his *bunda* he could not endure the changes of temperature to which he is frequently exposed, or guard effectually against the many maladies which those changes generate. In some parts of Hungary—in the comitat of Sobe, and at Liptau, for example —an excellent cheese is made from the milk of the sheep, which, with the wool and meat, yields fully as good a profit as that of the Merino. Upon humid soils, the latter would pine and perish, while the Hungarian would thrive and fatten.

The native sheep is known by his long vertical horns, spirally formed, his long legs, quick pace, and by his wool occasionally dragging on the ground from its extreme length. Unlike the Merinos, which are mostly kept all the year round in well-appointed stables, and choicely fed, the Hungarian is constantly in the open air, and seldom requires shelter even during the winter months. With a flock of 200 or 250 head, feeding on the mountains, the proprietors reckon annually to produce from 15 to 19lbs. of cheese per head; independent of this produce, the ewe gives a fleece of about 4lbs. weight, and the ram one of 6lbs., unwashed. When in good condition, the sheep will yield from 80 to 100lbs. of good meat, and the fat is also of a choice quality. Before the revolution of '49, a couple of sheep was worth about 12 florins (24s.); now they are asking 32 florins (64s.) for the same kind, everything in the shape of food having nearly doubled in price, except bread, since that epoch.

A Merino weighing from 60 to 70lbs. receives 2lbs. of hay, or its equivalent, for its daily food. About one-thirtieth of its living weight is considered sufficient. For sheep with lambs a larger quantity is given as food, and also during the last month of its lambing. One shepherd is generally allowed for every 400 sheep; and assuming 17,000,000 to exist requiring attendance, there are about 42,500 men constantly and exclusively employed in tending sheep in Austria.

The pigs were generally of very inferior breeds. The raw products, as we have already remarked, were exceedingly rich and abundant, if we except the ores of the more useful metals. Iron is now, for example, about double the price in Austria to that of England; and the cost of transport in most parts of the empire renders many of the rich and varied products of the soil comparatively of little avail to manufacturing purposes.

AWARDS TO ENGLISH EXHIBITORS,

As Published by the Royal Imperial Agricultural Society at Vienna, in their own Journal.

Edited by Professor Dr. Joseph Arenstein.

Gold Medals.

Messrs. Barrett, Exall, and Andrewes, Reading, for their portable steam thrashing machines.

Messrs. Clayton and Shuttleworth, Lincoln, for their portable steam thrashing machines.

Messrs. Garrett and Sons, Saxmundham, for portable steam thrashing machines and sowing machines.

Messrs. Howard, Bedford, for ploughs and harrows.

Messrs. Ransomes and Sims, Ipswich, for collection of portable steam thrashing machines, bruising mills, chaff-cutters, and ploughs.

Messrs. Davy, Brothers, Sheffield, for portable steam thrashing machines.

Mr. Henry Clayton, London, for patent steam brick-making machine.

Messrs. Hornsby, Grantham, for portable steam thrashing machines.

Messrs. Dray, London, for collection of thrashing machines, cleansing machines, &c.

Large Silver Medals.

Messrs. Coleman, Chelmsford, for extirpator.

Messrs. Priest and Wolnough, Kingston, for horse-hoes.

Mr. Turner, Ipswich, for crushing mills.

Messrs. Tuxford, Boston, for portable steam thrashing machines.

Messrs. E. and J. Humphrey, Pershore, steam thrashing machines.

SMALL SILVER MEDALS.

Messrs. Lloyd, London, for hand-mills.

Messrs. Smith and Ashby, Stamford, winnowing machines and chaff-cutters.

Messrs. Smith and Sons, Peasenhall, drilling machines.

LARGE BRONZE MEDALS.

Messrs. Burgess and Key, London, reaping machines.

Messrs. Hunt, Earl Colne, chaff-cutters, cleansing-mills, and sowing machines.

Mr. Lyndon, Birmingham, draining tools.

Mr. Wright, Stamford, harrows.

Place of Edition and Expedition in the Chancery of the Royal Imperial Agricultural Society at Vienna. Herrngasse No. 30.—May 23, 1857.

THE DRAINAGE CONTROVERSY.

There is this difference between the manufacturing and the agricultural community, that when any improved process in manufacture is brought forward, there is the utmost eagerness to test its merits by experiment, and to adopt it if found advisable. In agriculture, on the other hand, if any improved process is suggested, it is pretty sure to meet with some opposition. There may be good reasons why there should be this difference. We do not enter on that question: we are merely stating facts.

We might cite many cases of the opposition which improvements in agriculture have experienced that are now deemed the very perfection of agricultural practice. Of late there has been a great deal of controversy on the subject of land-draining, which appears to plain men to have been quite superfluous. We do not merely allude to the Keythorpe controversy: and we will go a few years back in the history of land-draining. We need only go back to the time of Smith, of Deanston. He introduced an innovation on the prevalent practice of drains at irregular intervals, designed to tap springs—a process which succeeded admirably in the cases to which it was applicable, but failed even in the hands of its author in many cases to which it was inapplicable; and he had not the general knowledge necessary to enable him to adapt his practice to varying conditions. William Smith, however, some account of whose life lately appeared in these columns, drained extensively, and from his knowledge of the varying conditions of soil, subsoil, and substrata, he drained successfully where Elkington failed. How his method differed from that of Elkington we know not. An old foreman of his says it consisted in cutting through a retentive bed to a porous one below. An admirable way, no doubt, when the necessary conditions are present. Smith knew too well to apply the plan when they are not present, which it is quite clear his foreman did not. The next change was the rise of the Deanston system, which was extensively adopted in Scotland, and not without considerable opposition in England. There was much cavilling at it as not original, because it was a combination of practices which had existed separately in different districts; parallel drains at regular intervals, for instance, in Suffolk and Essex; drain-tiles in another district, and subsoiling in a third. Smith, however, combined them, and may be considered the discoverer. His system was ultimately adopted and was generally practised, till an improvement arose from another quarter in the system of Parkes. The capital improvement in that system is the substitution of the cylindrical pipes for the horse-shoe tiles, and the increasing of the depth of drains. Its weak point was the assumption that depth will, in all cases, compensate for distance—a position which, we believe, is now abandoned by its most strenuous adherents. Violent was the controversy which raged between the adherents of Parkes and Smith. In the midst of this controversy a geologist discovers that between the soil and subsoil there are furrows, in which, if the subsoil is retentive, the water must collect; and he suggests, as a peace-maker, that perhaps the contradictory statements on both sides may be reconciled by observing whether the drains cross or run parallel with these furrows. A few years afterwards he repeats the suggestion more confidently, from having learned that the farmers in a certain district have cut across one set of these furrows, and have found by so doing they can drain a much larger area with fewer drains than when they are laid parallel with the furrows. The position is controverted. A nobleman who is present accidentally says that he has been cutting across these furrows on his own estate, and has thereby drained his land effectually and cheaply. The geologist visits the estate. He is satisfied that the land is efficiently drained. Accounts are shown him, which prove that this has been effected with one-half to two-thirds of the drains usually required to drain an equal area on similar soils. He obtains permission to publish an account of the drainage of the estate, and he calls this method of draining the Keythorpe system, from the name of the estate where it was practised. Numbers are liberally allowed by the noble proprietor to inspect the estate, and are satisfied with the drainage. Others pronounce judgment on it before they have seen it; and when they do see it, declare their previous conclusions to be confirmed. Then a fresh controversy arises respecting the existence of the furrows. After a time, their existence is admitted: new doubts are expressed whether they are general, and whether, if general, they are available in practice. Numerous observers bear testimony to their existence; methods are pointed out, by which they have been and may be determined, and determined cheaply. Now, surely, in a question of this kind, there is no necessity for controversy: the question admits of experiment: why not have recourse to it?

It has been said, and we think very fairly, "Why all this writing? If the furrows do not exist, the Keythorpe system will come to an end of itself, and there is no necessity for writing it down. If they do exist in a retentive subsoil covered by a porous soil, the consequence alleged to result from cutting across them must follow. On one side it is alleged that these furrows, if they do exist, are too irregular in their direction to be rendered available for draining purposes. It is alleged in rejoinder, that however irregular they may appear when only a small area is taken under consideration, they have a certain general direction, as proved when a considerable area is cleared of the soil, without disturbing the furrowed surface of the subsoil. The case is further illustrated by reference to the course of a river. Look only, it is said, at each separate reach, and you will pronounce it irregular in the extreme. Look at it on a broader scale, and the irregularities resolve themselves into regularity.

Again we recommend the cessation of further controversy on this subject, and of deciding the question at issue by the test of experiment. And we conclude with an extract from the paper on the "Farming of Buckinghamshire," by Mr. Charles Sewell Read, in the 36th No. of the *Journal of the Royal Agricultural Society*, the perusal of which, as coming from an impartial witness, suggested these remarks: "Every one," he says, "on looking at a chalk-pit, or passing a railway cutting, must have seen the deep indentations on its surface, which are mostly filled with gravel. These are sections of long furrows and of cavities, occasioned by the powerful action of water prior to the deposit of the superficial stratum. It often happens that a field which looks all of the same quality to the eye, has the chalk in some places within a few inches of the surface; and in another spot close by, the calcareous soil is covered with several feet of flinty clay."

THE LONDON, OR CENTRAL FARMERS' CLUB.

AUTUMNAL CULTIVATION OF WHEAT STUBBLES.

The last Monthly Meeting of the Club previous to the summer adjournment, was held on Monday evening, June 1, at the Club House, Blackfriars. Mr. Owen Wallis, as chairman of the year, presided, supported by Mr. N. G. Barthropp, of Cretingham; Mr. Shearer, of Swanmore; Mr. Trethewy, of Silsoe; Mr. Pawlett, of Beestone; Mr. J. Thomas, of Lidlington; Mr. J. Wood, of Ockley; Mr. Tyler, of Layton; Mr. Pile, of Tufton; Mr. Brickwell, of Overthorpe; Mr. J. Williams, of Baydon; Mr. Tatam, of Moultan; Mr. Spencer Skelton, of Sutton; Mr. Hammond, Berks; Mr. L. A. Coussmaker, of Westwood; Mr. Cressingham, of Croydon; Mr. Wood, of Croydon; Mr. Smythies, of Marlow; Mr. Hammond, of Kent; Mr. G. Cobb, of Bredgar, &c., &c. The subject for discussion, to be introduced by Mr. R. Bond, of Kentwell, Long Melford, Suffolk, was announced in the following terms:—"The autumnal cultivation of wheat stubbles, and the subsequent preparation and growth of a root crop, especially on stiff retentive soils."

The Chairman, in opening the proceedings, after mentioning the subject for consideration that evening, said he was quite sure that a more important one, practically, could not engage the attention of the club. Anxious, as many persons were, to carry out this desirable object, the matter was not unattended with difficulties; such at least was his experience in his own practice, with the appliances which they now had at their disposal. He hoped that in a very short time they would have most useful assistance in the steam plough or cultivator, and with such aid the system which they were all desirous of carrying out would be much more practicable than it was now. (Hear, hear.) Under present circumstances, with the ordinary amount of manual labour and of horse labour on the farm, there were many things that would not wait. First of all, in his neighbourhood at least, they had to clear the land of stubbles, and cart them home. Then there was the sowing of the rye and the tares for spring feeding, the preparation for the next year's mangold wurzel crop, wheat-seeding, and the storing of the mangold wurzel crop. All these things took so much time, that unless they had some help from other sources, to cultivate the whole of the next year's fallows simultaneously was all but impossible. He hoped, however, the time was not far distant when that object would be accomplished through such assistance as he had referred to; but if, in the meantime, Mr. Bond could show them how the thing might be partially done with our present means, he was sure they would all feel very much indebted to him. (Hear, hear.)

Mr. Bond then rose and said, Mr. Chairman and gentlemen, it is with pleasure I appear before you for the purpose of introducing the subject for this evening's discussion, for I feel it to be one of considerable importance, and you will observe, by the card, that it embraces not only "the autumnal cultivation of wheat stubbles," but also "the subsequent preparation and growth of a root crop, especially on stiff retentive soils." Although this is plainly a wide and extended field for observation, it shall be my endeavour to occupy your attention but as short a time as shall be consistent with the clear expression of my views; and if I should in any degree fail in perspicuity from too concise a treatment of the subject, it will afford me pleasure to answer such questions as you may afterwards feel it necessary to address to me. I propose, first, to speak upon autumnal cultivation; and because it is so much a matter of climate, I shall confine my observations as applicable only to the comparatively dry districts of England, such as the Eastern, South-Eastern, Southern, and Midland Counties; for it is evident the same remarks cannot well apply to a rain-fall, as in East Suffolk, of 21 in., and a rain-fall, as in Westmoreland, Cumberland, and Lancashire, of nearly 70 in. Gentlemen, we know well the proud position we occupy agriculturally as a nation. We know well that every country looks to us and learns from us; yet, notwithstanding our proud superiority, again, although we have in every county not only farms, but even whole districts managed with a degree of skill and judgment which can scarcely be surpassed, yet, I say, notwithstanding all this, there is, unfortunately, the reverse of the picture, and side by side with an almost garden culture we meet with cases and tracts of country where the most disgraceful foulness prevails to a greater or less extent. On the one side of the fence we may see all corn and no weeds, on the other comparatively all weeds and no corn. I believe we each know of such instances in our respective counties, and it is nothing unusual for us to see farms which, to use a popular phrase, "might be dragged away by the couch-grass." It is nothing unusual for us to hear the most plausible excuses for this foul evidence of mismanagement: either "the land is so subject to couch," or "the seasons hav'nt been favourable," or "it can't be got rid of," or "stock is as good as money:" these are the palliatives, but the evil exists; and it is not only a disgrace, but I know of nothing more expensive than this foul farming. (Hear, hear.) I cannot comprehend the economy of manuring for rubbish. I cannot understand the policy of seeding on pre-occupied ground—(Hear, hear)—and I cannot believe in the necessity for a cleansing process every fourth year. If England is to be farmed with the requisite skill and capital, if the utmost profit is to be realized from the soil, if the maximum of food is to be produced, foul farming must be done away, clean farming must be general—(Hear, hear)—and I can see no reason why it should not be. Almost garden cleanness may prevail. I do not share the views of those who succumb to couch-grass; it is not a necessary evil, and may be eradicated. I know of whole farms from which it has been expunged; they were once as foul as others. I know, too, that upon these very farms no fallow for a cleansing purpose has been necessary for years; one earth for turnips has been the system; any stray piece of grass has been removed by the fork—(Hear, hear)—and the land is thus kept clean from other than annual weeds at a very trifling cost. This, therefore, is no plan of comparatively free this year and foul again next; it is not a game of cleaning and fouling; it is a system of continued and continual cleanness; it is this which I advocate, and I know of no means by which it can so quickly and so cheaply be attained as autumnal cultivation. (Hear, hear.) It has been my experience that August and September are by far the best months for the destruction of any amount of weeds or rubbish (Hear): it is then the soil is peculiarly dry after the hot month of July, and after the removal of the wheat crop. The sun's heat is excessive, the thermometer often standing for successive days at 85 and 90 degrees; the mean temperature also exceeds by 10° the temperature of the combined months of March, April, May, and June, when the cleansing process is usually proceeded with, and it is in autumn the vitality of every plant is at a very low ebb; thus the usual dryness of the soil, the extreme heat of the sun, the high mean temperature of the atmosphere, and the expended energies of the plants themselves—all favour the autumnal work. With judicious management the perennial weeds cannot live through it, and I am convinced more good can be done by one day's work in August or September than by five days of hard labour in the spring. (Hear, hear.) Should we succeed in the economical application of steam to field operations, as appears both probable and immediate, it is in autumn cultivation that such an invaluable adjunct as steam for a motive power would be of incalculable service. (Hear, hear.) But without this assistance I have always been able, with the horse strength of the farm, to clean three-fourths of the wheat stubbles for early roots, and the remaining in the spring. In this way I believe any farm may possibly be cleaned from couch-grass in four years, but it may always positively be done in eight. I mention couch-grass thus pointedly because it is common to almost all soils, and it is more difficult to destroy than any other perennial excepting the dock; if, therefore, the couch is killed, all else will submit. I have always observed the heavy land weeds, which we in Suffolk know by the local names of mint, water-grass, peagle, &c., die very quickly from exposure. With your permission I will proceed to place before you the plan I have pursued upon different foul farms which have come under my management, and the system I shall describe has been carried out to some extent in the Eastern division of Suffolk. The farms have a clay subsoil. I farm them on the four-course shift, and, to show the adjustment of the horse labour, I will mention that I manure for the bean crop and the clover. I consider this to be not only the best course to pursue for obtaining the largest return from the crops themselves—(Hear, hear)—but it lessens the horse work in the wheat preparation, and allows of increased strength for cultivation on the stubbles; I have therefore no manure to cart for wheat, but simply to plough. I mow the wheat, which is the first crop ripe at harvest, before carting any; the whole horse strength of the farm is therefore at liberty for eight or nine days; the harvestmen work in a company; the sheaves are shocked a considerable distance apart from ridge to ridge; an extra lad suffices for carrying the extra distance; the labourers' wives are admitted to glean, and the two men reserved at harvest wages for working the horses begin operations between the rows of shocks upon the same or succeeding day of commencing harvest. As the land lies up in small stetches of 8ft. 3in., one man opens the furrows with a common plough and two horses; the other man follows with Biddell's scarifier, to which four or six horses are attached, according to the extent of the occupation and the size of the implement. These horses are worked from 5 o'clock in the morning till 12 o'clock at noon, the men in the mean time staying for breakfast; at one o'clock the men proceed with fresh horses, and work till seven in the evening, again stopping in the mean time half an hour for refreshment; thus, but little manual labour is required for working a large number of horses, and as it is hard work, is enough for the horses themselves. It is necessary to pass over the land twice with the scarifier, first with the tips or tines, afterwards with the hoes; in this way the land is thoroughly broken and the rubbish exposed to the action of a scorching sun; after the cartage of the wheat the few remaining stetches are then scarified in the same manner: this can be done in harvest; and if a farm is conveniently situated, the corn cartage and the autumnal cultivation may both be proceeded with. I observe, by reference to my labour book, that last year one scarifier was at work twenty days, which was ten days after the corn securing had commenced. Upon very foul land I scarify a third time, and at right-angles to the previous direction; the entire surface is thereby disturbed and more fully exposed to the action of the sun's rays. (Hear.) I have used the Biddell scarifier because it is a strong effective implement; I prefer it to the skim-plough—it can be worked more economically with manual labour, and this is a great consideration at harvest. The common plough is not suitable for autumnal cultivation, it buries the weeds instead of bringing them to the surface. (Hear, hear.) After harvest, and probably after rain, I harrow the very foul land, when the scorched and withered grass harrows out, and the clods fall to a powder; the couch-grass is then collected with the horse drag-rake and burned; if any small pieces remaining show the slighest signs of vitality they are picked by women and children. Having explained the process in detail, I will place before you the expense. It requires the equivalent of three horses per acre for a common day of nine hours to do the scarifyings and the furrow opening; therefore

	£	s.	d.
3 horses, at 3s. 6d. per day	0	10	6
1 man, 1 day, at harvest wages	0	5	0
For harrowing, raking, burning, and picking if necessary	0	8	0
Total per acre	£1	3	6

This is the average of the cost to me; in very extreme cases of foulness the expense is more—in other cases less, as the scarifyings often prove sufficient. I have drawn out the cost of the spring cultivation for comparison with the autumnal; thus, for cleaning purposes—

	£	s.	d.
3 ploughings, at 8s. per acre	1	4	0
2 cromings, at 1s. 6d.	0	3	0
3 rollings, at 9d.	0	2	3
Harrowing, raking, and burning	0	8	0
Total per acre	£1	17	3

When we contrast the two systems, it is evident which has the advantage in expense—say 14s.; and I do without the slightest hesitation assert that the cleaning in autumn is much more effectually done than in the spring (Hear, hear)—it is the season alone which makes the difference (Hear, hear). Spring is not so favourable a time; in March the soil is wet from the winter rains; April is characterized by its showers; May has but a mean temperature of 53°, and in June the fervid heat of summer does not usually commence till the 18th. Not only is the autumn cultivation cheaper and more effective, but the subsequent beneficial results are very considerable, especially on stiff retentive soils; it allows of early preparation for the root crop (Hear, hear), whereby the land is thoroughly frosted, producing a friability and a fineness of tilth which the roll and the harrow cannot so fully secure (Hear, hear); the frost also disintegrates the soil, and in conjunction with atmospheric influences supplies more food as available to the plant; the early preparation ensures moisture (Hear, hear) for the vegetation of the seed of the mangel-wurzel or swede; it also allows of early drilling, thereby not only securing a plant, but a heavier crop, from the increased length of time for the roots to grow. The further consequence of early seeding is the finishing the hoeing before the corn harvest commences, and ensuring early maturity of the plants. Early maturity allows of early harvesting, whereby the crop is carted from the soil in dry weather (Hear, hear), and the land ploughed before the wet season sets in; this again allows of thorough frosting, and causes the yield of a much better succeeding crop of barley. One other advantage even yet remains unmentioned as accruing from autumnal cultivation, and it is the increased breadth of good early root crops which may be grown on clay or loamy soils instead of no root crop at all, or but poor half-sized bulbs (Hear, hear). I now come to the second division of the subject, viz., "the subsequent preparation and growth of a root crop, especially on stiff retentive soils"; and my observations will apply solely to such lands, and to the Eastern division of the kingdom. Gentlemen, I am no advocate for long fallows (Hear, hear); I think a wide breadth unpaying and undesirable (Hear); I do not like the straw-and-water providential manure system which it induces (Hear, hear). It was all very well when we had neither the mangel-wurzel as a root, or artificial manures to assist us; it was all very well when a root crop could not be grown, or, if it could be grown, it would not pay; but if we are to have—as free trade promises on the average—cheap wheat and dear meat, our clay soils must be made stock-producing as well as corn-producing (Hear, hear). And why not? But, again, I do not like the common turnip system on heavy land, except for early feeding; it is prepared for late, it comes late, and it is carted off late (Hear, hear). And if any two principles are more fully established than others as to such soils, they are that the "land should never be trodden in wet weather," and "that it should be ploughed early to receive the winter's frost" (Hear, hear). But I often see these golden principles disregarded; I see the cart going all weathers—wet and dry the same; I see the field rutted in different directions—perhaps one mass of mud; and then to complete the mismanagement, the land unploughed till spring. As to the succeeding crop of barley, of course, it is but a mockery to expect any; it will not deserve the name of "crop"—it will be but an apology for one, and the land is injured for years (Hear, hear). Again, I do not set my seal to the growth of but half crops of roots on retentive soils (Hear,

hear); perhaps a little swede or a poor starved mangel-wurzel. This will not do; no root crop at all is better than a poor one, and poor root crops are ruinous; if we grow them we must grow them good. (Hear, hear.) Half farming here, especially, will not pay, we must do our utmost and be liberal. It is the abuse and the mismanagement of root culture which have stamped a strong objection to its extension on the minds of many; but this feeling is gradually and more and more relaxing, and I stand before you not only to uphold the extended growth of good root crops, but also to advocate the greatly-increased growth of a good root itself—I mean the mangel wurzel. (Hear, hear.) It has been my experience that we cannot in reason grow too much per acre, and the more acres we can manage to grow, the better. It is suited to our dry climate. It will grow as well on the stiff soils as upon the light; it is peculiarly a heavy land root; its early maturity suits the retentive soil, as it can be harvested before the wet season sets in, and its keeping property renders it invaluable, especially on such lands, because of the lateness of the growth of the grass for feed in spring. It is of superior quality to the swede or common turnip, and a much greater weight may regularly be grown per acre. (Hear, hear.) All stock like it, even horses thrive upon it; it is cheap food, and may be given to cattle in autumn if chaff is but admixed with it to counteract its laxative effect—(Hear, hear);—it is yearly becoming more appreciated, and I believe it will be most extensively cultivated as its value becomes known. I will now proceed to state the preparation which I carry out for this, the mangel wurzel crop. After the autumn cultivation, and as quickly as possible—generally in November—I plough the land upon the ridge of 27 in.; this land receives the frost, and if the weather is dry and suitable I again plough—usually in January or February; the fresh upturned surface probably becomes well frozen; in February or March I apply 18 or 20 loads of rich well-rotted manure, which has previously been admixed with a sufficient quantity of soil to affix the ammonia; I also sow 3 or 4 cwt. of salt and about 25s. or 30s. worth of artificial manure to the acre, after which I plough for the third time on the ridge, and the land remains thus till the 9th or 10th of April, when I commence to roll and drill; I put on 6lbs. of mangel wurzel seed and half a pound of swede seed to the acre. I will briefly explain my reasons for this course of management. I prefer the ridge system because I can grow larger crops; the manure is thereby placed at the full disposal of the plant—(Hear, hear)—the land can be more effectually cleaned; the hoeing down the ridge and the withdrawing the soil from around the root promote its growth. I plough in the spring; for by manuring and ploughing in the autumn, and simply horse-hoeing or scarifying previous to the seeding in spring, the land becomes too foul. I always endeavour to arrange that the land is ploughed a fortnight or three weeks before the drilling: this ensures a moist soil and the rapid sprouting of the seed. I had a good plant this year on 70 acres by the middle of May, when we know much land cannot be proceeded with in the cultivation for mangold wurzel, because of the absence of rain. I use well-prepared manure (Hear, hear), as the raw muck from the shed or yard does not decompose in the land sufficiently fast to become fully available to the growing root crop (Hear, hear). Guano hitherto has been my favourite artificial manure, but its present high price compelled me to resort to a manufactured article, and from previous satisfactory trials I was induced this year to substitute the mangold wurzel manure made by the firm of Messrs. Packard and Co., Ipswich. Although I plough in the artificial, I am careful to sow it in such a manner that a portion is near the surface for forcing the vegetation of the young plants. I consider salt most advantageous, as it certainly increases the produce and assists to early maturity. I am of opinion the land should be well consolidated (Hear, hear). I therefore roll before drilling, and frequently after. I apply a large amount of seed, as its average price is but 6d. per lb., and an extra 2lbs. or 3lbs. per acre almost invariably ensures a full plant, and allows of much earlier hoeing. Upon the growth of mangold wurzel I have but to remark that I hoe with the Messrs. Garrett and Sons' invaluable horse-hoe, and the common furrow plough directly the plants can be seen in the ridge. This year I commenced on the 20th of last month. Upon hoeing out by hand and singling I allow each mangold a space of 20 in. by 27 in. I repeatedly horse-hoe, and I feel I cannot sufficiently recommend its use; for the repeated stirring of the land greatly promotes vegetation (Hear, hear), and I believe it even pays to hoe when there are no weeds to destroy—it appears to furnish food to the plant (Hear, hear). I hand-hoe twice in addition to the equalizing the distance apart of each root. In September I remove by the fork any chance piece of couch grass which may have escaped. In October I harvest the crop: it has then attained its full growth, and it is a mistake to suppose it needs to stand to ripen (Hear, hear). It keeps best when carted at once (Hear, hear), without the least delay. Last year I commenced carting on the 16th of October, and finished on the 25th. The tops remaining were at once ploughed in. For the management of the swede crop precisely the same principles apply as for the mangold wurzel, viz., early ploughing on the ridge for thorough frosting, liberal manuring, early seeding, repeated stirring of the land with the horse and hand-hoe, early harvesting, and early ploughing for the following grain crop (Hear). I have always had my heaviest produce from seed drilled the latter part of April or the first week in May (Hear, hear). We have then no turnip-fly to harm, and it is in May all nature commences growth (Hear, hear). Why should the swede have so late a start in vegetation as June, whereby one of the best months, and perhaps even six weeks are lost to its progress? I have never suffered the slightest loss from mildew, although the swedes have been kept to the spring of the year, but I advocate securing them in October. It is the late standing which does the harm, and I am convinced that the stiff retentive soils which will grow good early swedes will not grow them to any size if planted late (Hear, hear). I believe it a mistake to suppose the early sown of inferior quality to those sown later: the one may have a greater juiciness than the other, but to me this is no proof of quality—it is only an evidence of immaturity, or of an increased proportion of water (Hear, hear). We do not harvest the green juicy stem of the wheat plant for human consumption, but we allow the fluids to be converted into the good dry grain: and as with the wheat, so with the swedes. The fluids of the early swede have only performed their function, and have been converted into the solid matter of the swede itself. This simply accounts for the popular error as to the apparent want of quality because of comparative dryness, and I have always noticed that stock thrive as well, if not better, upon the early planted than the late (Hear, hear). My father writes me on this point as follows:—"I have finished drilling swedes in April, and I never saw for the breadth of 60 acres better turnips or more feed. They were cut into troughs for hoggets, and no hoggets could do better." As it was mix-soiled land the swedes for later feeding were earthed in heaps of two or three loads upon the fields, and thus reserved till the spring. I am certain the word "early" is the secret of success in the preparation and growth of a root crop on stiff retentive soils (Hear); it induces a chain of consequences ending in a heavy crop of roots (Hear, hear), without injury to the soil producing the crop, and of the greatest possible benefit to the farm at large, allowing as it does of ample stock, of good and abundant manure, of productive corn crops, and of a high state of fertility generally (Hear, hear). These are no mean results, and they present a marked contrast to the old-fashioned fallow system, which was always one of whip! whip! of no root, no stock, no manure, and no stamina in the soil (Hear, hear). The stackyards were always too much filled with straw stacks rather than corn stacks, and we invariably heard a vast deal too much of "getting straw down" instead of making good rich dung (Hear, hear). The truth is, the crib was always too clean, and such a system never led to progress; it was a dull weary round, and it is as unsuited to the advancement, the appliances, and the wants of the present day as a washing-tub to navigation. The habits of men are changing, the population requires more meat (Hear, hear). We consume more, the French consume more, and for profit the law of demand must govern us (Hear, hear). We cannot do better than attend to it; and as more animal food is required, I conceive our best plan is to produce it (Hear, hear). I believe we can all grow more roots than we do, and I believe we can all keep more stock than we do; but the root crop must be a paying crop, and the stock must be a paying stock. This I believe to be a matter of management. We can grow mangold wurzel at a cheap rate per ton, and if we feed stock with an economical admixture of chaff, cake, and corn, we may manufacture meat at a profit; but the old plan of giving cattle all the cake and corn they will consume, is simply wasteful (Hear, hear). The animal system cannot appropriate the elements of nutrition, the major proportions are voided in the dung, and although such manure may be rich and nitrogenous, yet the constituents of meat (or that which should have been beef if properly admixed as food) is too costly for manure. We want the animal to manufacture the largest amount of meat from a given quantity of food, and expensive cramming will not do—it is far too unpaying (Hear, hear). By the extended growth of roots the manual labour of the farm is increased, and the horse labour also; but the thorough drainage of the soil which precedes root culture produces a much more rapid drying of the soil, whereby additional days are secured for field operations, and as the labour of ploughing and tillage is reduced, it allows of increased execution in the work, and extra horses therefore are not needed. I never considered it an indication of economical and good management that but a small proportion of horse strength should be maintained, as a little too late is then the bane of every operation—(Hear, hear)—and it is the great curse of heavy-land farming (Hear, hear). Five good horses, well fed, and worked daily, are a fair allowance for every 100 acres of arable land, and they are sufficient for carrying out the root culture I have described. Much depends upon the proper adjustment of the horse-work, and I have usually found the cultivation after harvest to come as follows:—Cleaning wheat stubbles, ploughing for wheat, mangold wurzel carting and ploughing the land, wheat seed, ploughing wheat stubbles on ridge, mucking and ploughing for beans, mucking clover layers, preparing muck for mangold wurzel, second ploughing of wheat stubbles, spring corn seeding, mucking for mangold wurzel and ploughing land, &c. This is the usual course of operations, but the weather often overrules, and I am particularly careful not to tread upon the land unless the work will do well; patience and expedition, we well know, are very important qualities in the management of stiff retentive soils. I purposely avoid any remarks upon security of tenure, agreements, buildings, or capital, nor am I prepared to say that the four-course shift is the best system (Hear, hear). In conclusion, autumn culture is one of the greatest modern improvements in the art of farming; it is applicable to any course of shift, and I am anxious to recommend its more extended adoption (Hear, hear). I have already pointed out that by autumnal cultivation foulness may be eradicated, cleanness attained and maintained, fallow labour reduced, root crops improved and extended, clay farms converted comparatively to stock farms, the straw and water admixture system changed for rich nitrogenous dung, and we know the sequence that "much increase is by the strength of the ox." In no other way can we so greatly increase the produce of cattle and of corn, and by no other means can we so cheaply attain to general cleanness and general fertility, much to our individual profit and to the good of the country at large (Hear, hear). Gentlemen, I beg to thank you for your kind attention; I may have expressed myself with confidence, but nothing has been further from my feelings than the slightest approach to the spirit of dogmatism; again I beg to thank you.

Mr. Shearer would like to know what implement Mr. Bond considered best for the autumnal cultivation of strong retentive soils, especially soils which contained flints?

Mr. **Bond** said he would state what he found to answer his own purpose best. The soil he was farming contained a few large flints. The implement which he preferred was Biddle's scarifier, which, with sufficient horse-power, would, he believed, pull up a turnpike.

Mr. **Shearer** inquired what number of horses was used with the scarifier?

Mr. **Bond** replied that he had two sizes; one to which he attached four horses, and one to which he attached six.

Mr. **Pile** (of Tufton, Hants) said he had used the implement which Mr. Bond mentioned, for the last six years, and had found it very useful. The great difficulty which he experienced in autumnal cultivation was, that he had so many calls for his horses. In that part of Hampshire where he resided there was no down, and last year he was obliged to sow 200 acres of vetches, rye, winter oats and barley, and trefolium for sheep keep in the spring, before he could sow any wheat. It was not at all surprising, therefore, that he could not spare men and horses to prepare the wheat stubble for the root crop. He quite agreed with Mr. Bond that it was desirable that the stubble should be prepared. He believed that all land that was intended for root crops required to be cleaned in the previous year, in order that the moisture might be retained in the soil. This year he had been highly favoured. They must all recollect that they had a very dry spring, and a finer February than last February no agriculturist, he supposed, could recollect. He had all his swede land stirred in February, since which time he had worked it down, and only used the scarifier. The great art in the cultivation of root crops was to retain the moisture after the soil has been well pulverised, and, as Mr. Bond observed, to get the crops in early. He hoped that week to finish drilling swedes. He had always found that early sowing produced the heaviest crops. He was led to adopt that system by attending a meeting of a club at Northampton, at which he heard some intelligent farmers who were present, and in particular a Scotch farmer, recommend early sowing and the use of the scarifier; and the advantage which he had derived from what he then heard illustrated how much good might be done among agriculturists through their imparting information to each other. (Hear, hear.) From that time he used the scarifier instead of the plough late in the season, and he had derived great benefit from the change. He believed the majority of farmers were stirring their fallows too late for root crops. It should be borne in mind that the sheet-anchor in corn growing was the growing of root crops; and if farmers could ascertain anything which would enable them to grow heavier root crops, it would be a benefit not only to themselves, but to the whole community. (Hear, hear.) He agreed with Mr. Wallis that for the purpose of carrying out Mr. Bond's object they must have addiditional power.

Mr. **Tatam** said, Mr. Bond had stated that he considered a crop of mangold wurzel far superior to a crop of swedes. He should be glad if he would say why he thought it superior. (Hear, hear.)

Mr. **Bond**, in reply, reminded the meeting that his observations on that subject were applied especially to the case of stiff retentive soils. (Hear, hear.) What he said was in effect that the mangold wurzel was decidedly superior to the swede for heavy land cultivation; and for this reason, that it would yield by far the largest crops. He had referred to the eastern counties.

Mr. **Tatam** had understood Mr. Bond to mean, that the mangold wurzel was in itself of superior value.

Mr. **Bond** would ask whether that was not of the greatest value which could be grown to the greatest extent. He must repeat that he alluded especially to stiff retentive soil. No doubt, in the north and in the western parts of England, the swede crop was superior to the mangold wurzel crop, owing to the peculiarities of soil and climate.

Mr. **Coussmaker** (of Westwood) considered the paper of Mr. Bond one of the most valuable papers that he had ever heard (cheers). As regarded autumnal cultivation he entirely concurred in every word that Mr. Bond had uttered. With respect to preparation for root crops, he could not say that he did altogether agree with him. For mangold wurzel he had himself always found one ploughing quite sufficient. He thought that they should plough as deep as the plough would go, in the month of November, and depend on the scarifier afterwards. As to ploughing, as Mr. Bond mentioned, two or three times, in such heavy clay lands as his own, that would be impracticable, at the time mentioned by Mr. Bond. With regard to the early sowing of swedes he would observe, that when he first began farming 16 or 17 years ago, he tried the plan of growing May swedes; and the result was, that he had good crops if the weather were favourable, while, if the weather were very dry, there was mildew. By commencing in the first or second week in June he avoided mildew. He perfectly agreed with Mr. Bond with regard to the injury done to clay lands by the treading of horses; and, in order to avoid that evil, he laid out his lands in such a manner that every acre could be cultivated without a horse putting his foot upon it. He had implements to fit the land, and the horses worked in the furrows. Salt was, he had no doubt, a very good manure for mangold wurzel on light lands, but he durst not use it for heavy land. It had the effect of ruining his land together, the soil being very retentive of moisture, and it prevented the action of the frost. In the case of heavy lands, therefore, he thought the use of salt in large quantities was very objectionable. To avoid the fly he had adopted a very simple remedy, and the result of its application was that he had not yet lost half an acre of swedes; it was the dusting them with about three bushels of lime per acre. The moment the swede shewed itself, in the morning his labourers applied the lime in the proportion per acre which he had mentioned, and so long as the lime adhered to the leaf the fly did not touch it.

Mr. **Williams** (of Baydon, Wilts) said he trusted that the implement of which he was the inventor would be found to supply the power required to carry out Mr.

Bond's object. He was glad to hear Mr. Bond's declaration that he had been enabled to carry out autumn cultivation already to the extent of two-thirds of his stubbles. That was, he was convinced, quite an exceptional case, and he must have had a large amount of horse power to have done it. (Hear, hear.) He would appeal to the other farmers present whether they had been enabled to succeed to the extent of one-third, or any thing like it. (Hear, hear.) All admitted the practical benefits of autumn cultivation, and for years they had been deploring the want of adequate power to carry it out. The portable steam engine would, he believed, be the means of supplying the deficiency. Autumn cultivation ought, in his opinion, to be commenced immediately after harvest, one hour's sun being of more value at that period than a whole day's sun later in the year. The earlier such cultivation was begun the more effectual would it be. Hee could not say much from experience with regard to the effects of autumn cultivation; for, though he had carried it out as far as he had been able, like his brother farmers he had been labouring under the disadvantage of not having sufficient power at his command; but it was well known that the weeds were more easily extracted at that period, than later in the year, or the next season, and the land would be ready either for vetches, or for turnips in the spring. They would steal a march, as it were, in agriculture, if they could bring the thing practically to bear. If by means of a simple implement and a steam engine, driven at a cost of 4s. per day, or of two implements involving a cost of 8s., with five men, a boy and a horse, they could cultivate 10 or 12 acres per day, which he asserted could be done next autumn—if that quantity of land could be cultivated in one day without the plough, which, as had been observed that evening, was not adapted to the case; if, by using the cultivator, they could accomplish so much work, and at the same time avoid the evil that attended the plough, of burying the weeds—the seeds of the summer ripening in the ground—they would, he repeated, steal a march in agriculture, and the results would be most beneficial to all. (Hear, hear.) So long as the curse rested on the land, "Thorns also and thistles shall it bring forth," so long would the seeds of weeds buried in the ground spring up in the succeeding summer. They ought, therefore, to germinate and be destroyed before winter. Such was his idea of autumn cultivation. The plough had hitherto been generally relied upon. If there were any twitch, it was ploughed in, and then, the next operation was, it was ploughed out again; whereas it ought to be brought to the surface at once, and extinguished. He had bestowed five years' hard study on this subject, together with the steam culvation, and had moreover spent £2,000 in the endeavour to carry his ideas into effect, and he thought he might say that he had now something like a practical insight into the matter. Mr. Bond, in speaking of his method of autumn cultivation, said he used one of Biddle's scarifiers, with two sets of horses, six horses from 6 till 1, and six more till night, so that twelve horses were employed, and I quite agree with him that, at that period, the whole of the day should be made the most of. Now, it should be borne in mind that the steam engine never got tired; and he ventured to say that, with an exchange of men and two horses, his own implement would cultivate 15 acres per day, between sunrise and sunset; not skimming the land, but really cultivating it. He despised a skimming system which left half the weeds in the land to produce another crop. (Hear, hear.) They must go three, four, or five inches deep, in order to bring the root weeds to the surface; moreover, the deeper they went the more atmospheric air would get underneath the seeds, and the quicker they would germinate. The question under discussion resolved itself into this—had they power to carry on autumn cultivation? He believed all present would agree with him that they had not; and the consequence was that it was never done. He stood there however to assert, as a practical man, that past autumn cultivation bore scarcely any relation to the future; the latter opened up, as it were, an entirely new view to agriculturists, and presented fresh prospects of advancement. On Saturday last his cultivator was doing at the rate of 10 acres a day, at a cost to himself, who found the implement, of 2s. per acre, cultivating his strong clay land six inches deep. His neighbours were quite astonished at such a result, having long predicted his downfall; they said they never could have imagined such an achievement. He quite concurred in the remarks of Mr. Bond with regard to the over-feeding of cattle. The system of stuffing animals with oilcake had been carried to an extent which was altogether opposed to nature. Mr. Williams then narrated an instance, as told to him, in which some pigs fed to some extent on cinders (laughter), did better than some other pigs in the next sty which had not received any such diet; and he said he attributed the benefit to the tendency of the cinders to correct the evil effects of excessive food of too heavy a nature. The digestive organs were, he conceived, over-charged, and their proper action was thus restored. Strange as this statement might appear, it was borne out by actual experiment in his own neighbourhood. He could say much more on the subject of steam cultivation, such as a self-acting supply of water, hedge rows to be grubbed, pits filled in, land exchanged between neighbours (Hear, hear), but he would not now further intrude upon their time, as he intended to publish a little pamphlet for 1s., for the information of those who wished to know what might be done by means of steam cultivation; when he would be able to say, as Abernethy said to his patients, "Read my book" (laughter).

Mr. TATAM (of Moultan, Spalding) wished to put one or two questions to Mr. Bond. Mr. Bond had alluded to April-sowing of mangold-wurzel and Swede turnips. He (Mr. Tatam) lived in a county (Lincoln) in which both were cultivated to almost as great an extent, and perhaps as judiciously, as in any county in England, with one exception, that exception being Norfolk. He had found, from observation, that a very large proportion of mangold-wurzel roots and Swede turnips would run to seed, if sown in April; that there was often great waste; and that you might sow too early as well as too late.

He would not admit that it was either so cheap or so good to feed cattle on a mixture of root and artificial food as confining their food to oilcake and corn. Perhaps Mr. Bond would have the kindness to give them his estimate of the cost of cultivating a root crop.

Mr. Bond said he should be happy to afford information, as far as it was in his power to do so. With regard to the relative advantages of April and May-sowing, he must again remind the meeting that he had been speaking especially of the heavy lands of Suffolk; and, in recommending what he did, he of course had in view the subsequent advantages. The crop was gathered early, and the land was ploughed early for the succeeding crop. If he saw a mangold starting to seed, he at once cut down the top: if it ran again, he cut it down again. This process did not appear to be injurious: there was still a very good root. The proportion of roots that ran to seed was very small—generally not more than eight or ten roots per acre. He did not exactly understand what Mr. Tatam meant with regard to confining cattle to cake and corn.

Mr. Tatam: Suppose that, instead of giving cattle a stone of cake a day, you gave them 6 or 7lb. of cake and 3 or 4lb. of bean-meal, would not the latter be as cheap as the former, and cheaper than roots or and cake?

Mr. Bond would say, decidedly not. Mangold-wurzel might be grown at an expense of from 6s. to 7s. per ton; and it was infinitely cheaper to consume than corn and cake given lavishly. He had been speaking against the excessive use of cake. However nitrogenous cake might be, he did not approve of giving 8 or 9lb. a day.

Mr. Smithies (of Marlow) said, living as he did further north than most persons in that room, he was enabled to confirm the testimony which had been given in certain Scotch journals as to the undesirableness of giving cattle unlimited quantities of cake. As regarded the relative value of swedes and mangold-wurzel, there could be no doubt that swedes grown in the north or north-west of England were much more nutritious than swedes grown on the east coast; while, on the other hand, the mangold-wurzel of the former was inferior to that of the latter. He had found that, at a certain season of the year, swedes became useless; but, on the other hand, when he resorted to mangold-wurzel, the stock deteriorated. They were quite astonished in the north, when they heard of a stone of cake a day being given to cattle. He had never found it possible to get an animal to eat more than 5 lbs., except when he had mixed a little malt with the cake, which induced the stock to eat a greater quantity. Three or four lb. a day was the utmost quantity that his cattle would generally eat. How cattle were got to eat so much on the east coast, he could not conceive. What was said by Mr. Bond with regard to autumnal cultivation had greatly interested him; and very glad would he be if the climate in the north-west enabled him to imitate such an example. At present, all that they could accomplish was one or two fields. What Mr. Williams would do for them, in that respect, remained to be seen; but he did hope that, ere long, farmers would be enabled to apply steam to their operations, as his neighbours, the manufacturers, applied it to theirs (Hear, hear). They were certainly going in the right direction, by using steam with scarifiers; whereas, if it were to be applied merely as it was recently at Chelmsford—in drawing ploughs—it would be of very little use. With such fields as his own, which were very uneven, such an application as that would be impracticable. He hoped Mr. Williams would take his cultivator to Salisbury: he should certainly purchase one as soon as it was likely to work well for himself. If they could get rid of the weeds in the autumn, that would enable them to plough deeper at Christmas. He thought, too, that, if they worked their stubbles, they would be enabled to put on the manure in the autumn; and the result would be, that there would be less waste of manure, and they would be benefited in the spring, as regarded labour. Moreover, if they ploughed deep in autumn, there would be no occasion to plough again in the spring: they would work much cheaper with the scarifier, and keep the same soil on the surface that had been exposed to the frosts of winter. They would thus secure a better tilth than all the Crosskill's or other pulverizers that had ever been invented would give them, and have more moisture where moisture was required.

Mr. Williams said, in allusion to one remark of the last speaker, he wished to observe that his implements would be at Salisbury, and would be open to the inspection of all who might wish to see them. He had invented a method by which the common portable engine might be made locomotive. Two engines would start from his place—a distance of 40 miles from Salisbury—drawing the implements with them, and he would ride behind one of them. (Laughter.)

Mr. Tatam would be glad if Mr. Bond would state what are the prices of labour in West Suffolk.

Mr. Bond regretted to say that it was only nine or ten shillings a-week.

Mr. Tatam observed that that was a material element in the matter under discussion. (Hear, hear.)

Mr. Barthropp (of Cretingham, Suffolk) said the system which Mr. Bond advocated was adopted to a great extent in his county, though not so universally as was desirable. Mr. Tatam had made an observation about the mangel running away. He did not think that was a consequence of early seeding; it probably arose from their not being particular enough about the seed being properly grown. He recollected some years ago sowing mangel wurzel on the three last days of March, and it turned out the very best crop of mangel wurzel he ever grew. He had very few runaways, and those that he had he was very glad to use for pigs.

Mr. Hammond (of St. Mary, Cray, Kent) said, as a turnip grower, he was disappointed at so little having been said about the best method of growing turnips. It was easy to find a very fine crop, but then he wanted to know what expense had been incurred in raising it. He would tell them what it cost him to raise a crop of turnips in Kent. He ploughed his land immediately after harvest, and ploughed it again as soon as the land was in a fit state. His practice was to plough in all three times, and to give the land such harrowing as it required.

Swede turnips he would not on any account sow before the end of May. He would put 20 yards of farm-yard manure, which he would charge on the land at 3s. per yard; he would put 2 cwt. of guano; he would horse-hoe and other hoe at £1 per acre, and, taking into account rent and taxes, he had no doubt his crop would cost him nearly £10 per acre. Mr. Bond, no doubt, grew superior crops of turnips to his own, but he would be glad to hear from him what was the expense which he incurred. He believed that last year the cost to himself was not less than £11 per acre, and at that expense he was on the whole rather a loser—growing, as he did, 31 tons of mangel per acre. As regarded the period of sowing, he might observe that he had himself sown a good deal in April, but that in that case a great quantity of the roots had always run to seed; on the other hand, when he had sown in the middle of May he had always been fortunate in his crop.

Mr. **Bond** said he had expressly stated that his expense was 7s. per ton. He did not mention the expense per acre, because he did not think that mode of putting the matter desirable. He did not think mangel could be grown for less than 7s. per ton, and, taking the production at 30 tons per acre, 10 guineas fairly represented the cost per acre. He did not think the cost of preparation was as great in the case of swedes as that of mangel wurzel; but on the other hand, they did not get so heavy a crop, and the quality of the mangel wurzel grown in the eastern counties was greatly superior to that of the swede. He particularly urged the growing of mangel wurzel on heavy land, because what they wanted was a heavy crop. He would much rather have one acre with 40 tons than two acres with 20 tons each. (Hear, hear.)

Mr. **Smithies** inquired whether Mr. Bond meant that he considered a ton of mangel-wurzel of more value than a ton of swedes?

Mr. **Bond** continued: Yes, because it contained more saccharine matter; and his experience was that beasts did better upon it. His animals got on very well upon mangel-wurzel, provided it were mixed with a large proportion of chaff; but without this admixture it was too laxative in its effects. He believed that with a wet climate swedes were the best, while with a dry one like his own county mangel-wurzel were the best.

Mr. **Wood** (of Ockley, Sussex) said he farmed a stiff, heavy, clay land, and was nearly always behind with it; and though he should be very happy to carry out Mr. Bond's system, if that were practicable, he had not hitherto had strength enough at his disposal for that purpose. Such was his sense of the advantages of autumn cultivation, that he doubted whether it would not answer his purpose even to purchase horses expressly for it (Hear, hear). As regarded the application of steam power, he should be very glad to see it carried out in practice to the extent that his sanguine friend, Mr. Williams—if he would excuse that designation—appeared to anticipate; but he confessed that he was somewhat sceptical on that point. He would like to find himself mistaken, for no one would benefit by steam power more than himself. He concurred in the opinion that the comparative advantages of different root crops depended very much on situation and climate. In feeding his animals, he found it advantageous to amalgamate different kinds of food. He cut his hay, and mixed it with half its bulk of chaff. As regarded oil-cake, it was his practice to give a bullock of one hundred stone weight not more than two cakes of two pounds each per day, besides corn. He always obtained his cake from France, believing that it was not adulterated like that which was generally offered for sale in England. He would not like to use salt on his clay land; he had tried the experiment of using it, and the result was not at all satisfactory. When old grass land was broken up, salt might be very useful in checking a tendency to excessive luxuriance; but in the case of stiff, heavy, clay lands like his own, he could not conceive how any benefit was to arise from an application of salt.

Mr. **G. Sidney Harrison** (of Clifton, Hampden) said the question under discussion appeared to have turned to a consideration of the relative value of mangel-wurzel and swedes, owing to the saccharine matter of the former. On that question some light might be thrown by the practice of the distillers with regard to the beetroot, of which they were, in fact, very extensive consumers. It appeared that when the root was useful to farmers, it was useless to distillers. The distillers commonly used it from October to March or April, after which period no sugar could be extracted, therefore its value was not dependent on that account.

Mr. **Robertson** (of the Botley Club) said he had found that year that the effect of sowing mangel-wurzel very early was that the seed lay too long in the ground, and became a prey to insects; and he did not obtain so good a plant as he had done when he had sown later. He had seen mangel-wurzel used to a very great extent, and with great advantage, in the fattening of pigs and beasts; they began to use it even in October. It was always out a day before it was given to the animals, and was sprinkled with as much barley-meal as was required to cover it. A ton and a-half of mangel-wurzel thus given was found to be equal to two tons of swedes.

The **Chairman** said he was sure they would all agree with him that they were very much indebted to Mr. Bond for the very able paper which he had read. A more interesting, or a more practical paper he had never heard in that room, or elsewhere; and he would not take up the time of the meeting by repeating anything which it contained. With regard to the difference between the quality of the swedes grown in different districts, he would observe that there was no comparison between the swedes of the North of England and Shropshire, where the climate was moist, and the swedes of the eastern counties, and even the midland counties. It was impossible that such good animals could be produced by means of roots alone in the latter districts as in the former; and it was easy, therefore, to understand why more cake was used in the one case than in the other. This should be borne in mind in considering the question of relative value. Again, with regard to mangold wurzel, he could easily comprehend why it should be much better with a dry climate than with a moist one, the great objection to mangold wurzel being the large proportion of water that it contained, especially where the climate was very moist. Every one who grew mangold wurzel to a great extent must have found that the drier the summer, and the hotter the weather, the greater was the amount of roots, and the greater their value. That remark, of course, applied especially to the eastern coast, where the climate was comparatively dry. With respect to the autumnal cultivation of stubbles, he would remark that he was quite as sanguine as Mr. Williams himself in reference to the application of steam-power to field culture. He had no more doubt than that gentleman had, that in a short time—and he did not care in how short a time—they would see the steam engine as busy in the field as it was now in the stack-yard. He was convinced that the greatest benefit that could be conferred on agriculture was the application of steam-power to field cultivation.

Mr. BOND having briefly replied,

On the motion of Mr. SHEARER, seconded by Mr. TATAM, the following resolution was adopted :—

> "That, in the opinion of this Club, the progress of agriculture will be greatly developed by an extension of autumn cultivation—and that the adaptation of steam-power to that object is extremely desirable."

Thanks were then voted to Mr. Bond and to the Chairman, and the proceedings terminated.

AGRICULTURAL POLITICS—WHAT THE GOVERNMENT SHOULD TAKE UP.

The present state of the House of Commons augurs well for business, and for the consideration of questions which have hitherto been sacrificed amidst the strife of party warfare. With a decided majority on the side of the Minister, and with the absence of that exuberance of eloquence which has long retarded business by a flood of talk, there is good hope that some of those questions may be approached in a dispassionate spirit, and discussed on their own merits. How long this desirable state of things may last is another question. It is therefore the more to be lamented that at the present advanced state—we will not say of the session, but of the season—no progress is likely to be made in such questions as the following. To enumerate only a few of the most important, there is the education of the people, including industrial and middle-class education; there is the establishment of a decimal system of weights, measures, and money; and the improvement of arterial drainage. What may occur before the commencement of another session to raise other questions, which may retard the advancement of the above, who can say ? It must not be forgotten, too, that the present Government are less likely, perhaps, to originate them than others which we have had; though there has probably not been for a long time one more likely to propose them if convinced that the country desired them, or better able to carry them through successfully. In this country nothing is gained without agitation; and if such improvements as those indicated above are desired by the people, they must move for them. The anomalies existing in the sale of corn by weight in some districts, and by measure in others, as well as the different quantities passing under the name of a bushel in different and even adjoining markets, had attracted the attention of agriculturists at the commencement of that which proved to be the last session of the late Parliament, while they appear to have survived the election.

Our journal of the week before last contained an advertisement of the resolutions passed at a meeting held at Northampton, respecting the inconveniencies resulting from the variety of weights and measures by which the different kinds of grain are sold in different parts of the kingdom. They expressed an opinion in favour of the sale of corn by weight, inasmuch as wheat, barley, and oats may and do commonly vary as much as ten or twelve pounds the imperial bushel. They state likewise that 60lbs. was assumed as the weight of the imperial bushel of wheat for the purposes of the Tithe Commutation Act, which they declare their unwillingness to disturb; and they give it as their opinion that the above weight fairly represents the average weight of a bushel of wheat. They therefore pray the legislature to fix that as the standard weight of a bushel of wheat, and such other weight as the standard for other descriptions of grain as shall fairly represent an imperial bushel. They further pray that the Act of 5 Geo. IV., cap 75, intituled "An Act for ascertaining and establishing Uniformity of Weights and Measures," may be altered so as to give definite weights for each description of corn, and make the act compulsory in every part of the kingdom. The want of uniformity complained of arose solely from the above flaw in the act, which, while it established the imperial bushel as the standard, failed to make the use of it compulsory. While these were the opinions of the meeting at Northampton, those of the Farmers' Club of London appear to be considerably divided as to whether corn should be sold by weight or by measure, while they were strenuous and unanimous respecting the necessity of enforcing uniformity, whether of weight or of measure. The question, therefore, of the sale of grain by weight or by measure may be considered one of Sir Roger de Coverley's questions, on which there is a great deal to be said on both sides; while with respect to uniformity of some kind there is no difference of opinion. There is one point which appears to be overlooked in this discussion, or at any rate not to have received the attention which it deserves, namely, which is the most prevalent custom ? This is an important question; because, whichever is the most prevalent, we may be certain that will be the mode most easily established in general use. It is satisfactory to hear that the Central Club is about to pursue its enquiries on this subject; and to obtain, as far as is possible, the opinions of the whole country on the best and most feasible means of establishing that uniformity of custom now so generally advocated.

The question of arterial drainage, or the improvement of outfalls, is one to which attention cannot be too soon or too earnestly directed. Attention has been drawn to it by the Society of Arts, which on more than one occasion has taken the initiative in questions of agricultural progress. If we mistake not, the Society has offered a prize for the best essay on arterial drainage in connexion with geology and engineering. These, however, are not the most important parts of the question. The difficulties to be surmounted in carrying into effect a system of arterial drainage are neither geological nor engineering: they are moral, social, and political. They arise out of time-honoured vested interests in things as they are; and they arise from the intermixture of property, and that power which the minority of a district in which the outfalls require to be deepened have to throw obstacles in the way of improvements by the many. These difficulties have been overcome by agreement in several districts, though not without much of opposition, much time expended in surmounting it, and much compromise in the execution of the works, arising from reluctance to incur the outlay necessary to secure the full benefit of the improvements. The difficulties arising from navigable canals, mills, and so forth, were compensated upon an equitable principle. In the case of mills this consisted in estimating the steam-power equivalent to the water-power actually used, and capitalizing it: allowance was also made for the expense of alteration and maintenance. It would occupy too much space on the present occasion to state the principles which appear to be those requiring to be kept most in view in any measures for the improvement of arterial drainage, so as to ensure unity of action and a central control, without too much of centralization. The measure, also, ought to be of such a kind as to guard against draining the country too much as well as too little—an error into which we hope to show on some future occasion that it is possible to fall. All the water of wells and springs is water that has fallen from the atmosphere; and the annual rate at which the water-level of the artesian wells round London subsides should warn us that, if all water is to be turned into the sea, and not preserved in subterranean reservoirs, the time may come when we shall complain of a deficient supply of it. —Mark Lane Express.

CULTIVATION OF MILLET.

Sir,—Since you reported the treatise on the Cultivation of Millet I forwarded to the Royal Agricultural Society some months since, I have had many inquiries (written and verbal, by some who had seen the treatise and others who had not) on the subject; and as I still believe that it may prove a useful herbage plant, I state the final result, as the millet was in a green state when I published the treatise, to draw the attention of my neighbours to it, and lead them to watch its progress, and also of passers-by, as it was sown at a bend of a turnpike road, close by a gate, and no one could pass without seeing it, growing as it did among Swede turnips.

I had been led to try to grow millet some 40 years since by the astounding accounts of its produce of seed, and at intervals afterwards; but, as I have since ascertained, I probably sowed the seed two months too soon, and succeeded badly, and gave it up. Mere accident led me to purchase some millet seed at the right time last year to sow in my garden, to show an inquiring young friend what kind of plant it was. My garden being a heavy soil, and passing a neighbour's field (a light soil) being sown with swedes, I scattered a few millet seeds. In both cases it grew upwards of 4 feet high. Every kind of stock eat it readily; it produces abundance of seed, and cattle and horses eat the straw after producing seed.

If I quote the answers to the questions put to me it will be sufficient to enable those who have seen the treatise, and those who have not, to decide whether to attempt to grow any millet or not.

There are several species of millet: I have seen but three sorts. The African millet seed is nearly as large as lentils, but flattened. This species is eaten by the natives. The Italian millet is now imported into this country to feed cattle. This is a less seed, and dark brown. The French millet is imported to feed cage birds. Millet flour is sold in all large towns at 8d. per lb.; and millet is in demand to make patent starch, "and cannot get a sufficient supply," as I am credibly informed.

Several of my neighbours are about to sow some millet, presuming that it will supply them with fodder when tares are done, and second-crop clover is become worthless—to keep neat stock under cover when flies are troublesome, and the horses in the yard at night, in lieu of hazarding their breaking pasture and falling into ditches. Of course on different farms it would be of different value, according as pasture abounded or not.

I am, sir, your humble servant,

Chas. Poppy.

Witnesham, Ipswich, May 29.

P.S. It is the French seed that I have sown; the price was 12s. 6d. per bushel. Half a bushel per acre is a sowing crop, and a peck for seed.

I should think it might be grown on Exmoor; it is not tenacious of soil.

Seeing J. Hudson Esq.'s advertisement, offering early tares, I sent him a treatise on millet, which might be grown after his tares were mown. In answer he stated he had sold all his tares, but sent me a sample; these I planted, and are now above a yard high and full in bloom.

CALENDAR OF AGRICULTURE.

Turnips sown this month are less liable to the fly than those sown last month, and are not so much mildewed. Horse and hand-hoe potatoes, beet, and the earliest sown Swedish turnips, and repeat the processes, that no weeds appear: plough the intervals the first time with a heavy scuffler, as Morton's expanding drill hoe; a lighter tool may afterwards be used. The young plants derive much benefit by stirring the intervals of the drills with a scuffler, and most in dry weather; it causes evaporation of moisture, which is imbibed by the plants.

Plough, harrow, and roll clay land fallows for wheat, pick off by hand all weeds and stones from the ground, and get ready the dung and lime that are to be applied.

Proceed with draining both on grass lands and on fallows; the last not to stop the operations of working the land. Draining is very neatly and conveniently done on grass lands; the surface is clean from filth, and the turf is easily got to cover the tiles or stones in the drains; but the course of drains is best marked in winter during wet weather.

Wean the latest lambs, and give them the best encouragement. Put mares to the stallion regularly. Attend that the pasture fields have a supply of water, and that no gaps are continued in the fences.

Sprinkle over the sheep the contents of the dredging box, to prevent the fly depositing the eggs; dress clean the posterior parts of the animals from the adhesion of any excrements.

The hay season will be ended this month: make dry and carry the grass quickly, build into long ricks, lay it lightly together, and allow it to settle by its own weight; it is a mistake to tread it firmly together. Pull nothing from the ricks till well settled; then dress into any form, and thatch without delay. To get the hay up to a high rick, use a scaffold raised on four upright posts, resting below on a four-wheeled platform, and elevate or depress the scaffold by means of pulleys to any position that may be required; lay some loose straw on the extreme top of the rick till it be thatched. When hay is damaged by rains, mix with salt, as directed last month. During nights, spread over the rick a tarpaulin cloth, which will defend the hay; remove it in the early morning, to let the sweating of the grass escape. To defend the rick from day showers, suspend over it a light cloth, by means of a rope passing the length of the rick, and attached at each end by an upright pole.

Harvest will begin this month in early localities; early peas, barley, and rye will be the first cut; tie the barley and rye into sheaves, and place in shocks of twelve sheaves each; lay the peas in small heaps, and turn them over frequently; carry the grain quickly when dry; have rick stands ready, and barns cleaned out.

AVAILABLE SUBSTITUTES FOR GUANO.

Sir,—In reading your number for this month (June), in the article headed "Guano: its composition, and the available substitutes," I find an allusion made to the use of poultry and pigs' dung mixed with ashes as a substitute for guano. As I have for some years made what I call home-made guano for my own use, it may perhaps be useful to some of your readers to know my simple and economical plan of manufacturing this useful manure.

Between the months of May and harvest I set some men to burn the borders of the ditches round my fields of heavy clay land; some of these ashes I cart home into my rick-yard; the floor of the henroost is coated over 6 in. deep with ashes, and when the place becomes dirty from the fowls' dung, another coating of ashes is laid upon it, and so on, as required.

The sties that I feed my pigs in have their brick floors sunk as low as the foundation of the building, and below the level of the farm-yard. Before I put any pigs up to feed, I spread ashes on the floor about 6 in. thick; upon that I place cut straw chaff about 4 in. thick, which makes a bed for the pigs. When this becomes dirty, I repeat the dose of ashes and chaff until the pigs are raised nearly 6 ft. above the floor. By this time the "guano" underneath them begins to heat, when I remove it, and place it under a *covered* shed to ferment; on wet days it is turned over, and the compost from the henroost mixed with it. I also have a tank to catch the liquid manure from the cattle sheds, some of which I sprinkle over the heap. Before turnip sowing, I have the whole screened over, with which I mix superphosphate in the proportion of 2 cwt. to twenty-five bushels of compost, which I consider sufficient to drill in with one acre of turnips: by this means I generally obtain good turnips, without the cost of Peruvian guano.

A Cold Land Farmer.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JUNE.

The weather during the greater portion of this month, notwithstanding that we have had a long continuance of easterly winds, has been favourable. In nearly all parts of the country rather large quantities of rain fell during the third week, and which were productive of the greatest benefit to the crops. With very few exceptions, the advices at hand in reference to the wheats are very satisfactory; up to the present time they have progressed well, and there is every prospect not only of an abundance of grain, but a large return of straw; and it must be gratifying to learn that even those immediately interested in keeping up prices admit that the whole country never presented so promising a crop of grain as at present. The barleys, too, have grown steadily, and, whilst the wheats have been in full ear in some of our most forward counties, there is every chance of a full average return. Oats, beans, and peas are looking well, even upon most inferior soils. Notwithstanding these favourable advices, the corn trade has been somewhat brisk, and the value of wheat has advanced from 2s. to fully 3s. per qr. This state of the trade, however, refers more particularly to Mark Lane and to the leading local markets, as we find rather a reverse state of things at Liverpool. At that port the improvement in the quotations has been trifling, owing, no doubt, to the comparative dulness in the trade in the manufacturing districts, in which the consumption of cotton is now from 5,000 to 6,000 bales less per week than in 1856: still, there is every reason to anticipate steady prices for nearly all kinds of produce, and our reasons for this remark may be briefly explained. From the tenor of our advices from the United States, it would appear that the stocks of grain in the hands of the growers are very little in excess of the wants of the population. It follows, therefore, that the shipments for some time hence, although we learn that new wheat has made its appearance in some of the southern markets, will be very limited. The Baltic and Black Sea ports, too, do not show any large quantities of grain for export purposes, and from other quarters of the globe it is scarcely possible that we shall receive large supplies. On the other hand, however, —and here is a powerful influence in reference to price—our crops are looking well, and from the continent generally we have advices to the effect that wheat promises abundantly. Again, the supplies of wheat of last year's growth in the hands of our farmers are still good, certainly quite equal to last year, though deficient in quality; and we may take it for granted that, owing to the high value of discount accommodation, importers of foreign produce will not be inclined to risk the expense and possible loss of sending their grain into warehouse. We find, however, that at the present time there are only about 100,000 qrs. of foreign wheat in warehouse in the metropolis, and that the total quantity in the United Kingdom is under 250,000 qrs. The facts to which we have thus drawn attention are in favour of steady prices; but, in the event of the new crop of wheat proving of fine quality, we shall shortly see a much smaller range between the value of fine and inferior parcels than at present.

The splendid prospect of the vine crop in France has checked the demand for malt spirit in this country for the Continent. Should the grapes go on well, the export spirit trade will, no doubt, fall off, and there will be much less barley used in distilleries than during the last two years. We may therefore assume that barley has seen its highest range of value; yet any decline in it is scarcely possible, as our farmers hold scarcely any stock. The quantity of oats on hand is unusually small; but the supply of beans and peas still in stack is rather large.

Haymaking has been commenced under the most favourable auspices, and some quantity has been carried in admirable condition in the neighbourhood of London. The growth is certainly a large one, but we doubt whether it equals that of 1856. There is still a large quantity of old hay on hand in various parts of the country. The season for new meadow hay has opened in London at £3 to £3 12s., for new clover £3 to £3 15s. per load.

The cattle trade has ruled somewhat heavy, and prices almost generally have given way. The stock generally has fared well, owing to the immense abundance of food in the pastures. The Norfolk "season" for beasts has been nearly closed, and its result has been highly favourable to the breeders. From that county London has been supplied with numerous fine animals during the past six months; and now the northern counties are about to forward supplies, which we hope will prove of finer quality than last season.

It will be recollected that towards the close of last year we contended that the growth of potatoes in this country was a very large one. This statement was questioned even by some of the growers; but we have now arrived at the end of the season, and are consequently in a better position to judge of the accuracy of various statements submitted to us. Our markets have been well supplied since September; prices have ruled very moderate, except during a portion of the month just concluded. We have had very few imports from abroad, consequently consumption has almost wholly fallen upon home supplies, and even now abundant quantities are to be met with, for the time of year. No doubt the large growth has had great influence upon the value of the better kinds of food, both here and in Ireland and Scotland. The new crop looks well, and very few traces of disease have been met with.

The wool trade has ruled extremely heavy, at the decline noticed last month. From our colonies, as well as from abroad, rather large supplies of wool have come to hand, and the supply in warehouse in the metropolis for the next public sales already exceeds 40,000 bales. The Continental wool markets are certainly somewhat firmer than our own.

The imports of linseed have been small compared with former seasons, yet the demand for that article has been far from active, and prices have had a downward tendency. The quantities on passage to this country are very moderate.

In Ireland and Scotland the grain trade has continued steady, and prices generally have been firmly supported. There appears to be an average supply of food in Scotland; but we learn that very few oats are now in the hands of the Irish growers. The shipments of fat stock to England have been liberal, and in good condition.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

The high quotations lately current in the Great Metropolitan Market, which, no doubt, have checked consumption both in London and in the provinces, especially in the manufacturing districts, where both the home and foreign trade has become inactive, have been followed, as we have previously anticipated, by a considerable increase in the supplies of fat stock. This increase has had the effect of producing a heavy demand, and a decline of from 2d. to 4d. per 8 lbs. has taken place in the quotations generally. Some persons attribute the increase in the supplies to the close of the Norfolk season, but we believe that our opinion is the most correct one. That season has certainly been a most abundant one; we have received from that county a large supply of well-made-up stock, and the returns to the graziers have unquestionably been large, though not in excess of most corresponding years, when we take the high value of store animals into consideration.

The result of Professor Simonds inquries into the murrain on the continent, to which we have previously alluded, convince us that not only have the effects of the disease been over-stated, but that we have very little to fear from its introduction into this country. We have already pointed out the districts from whence we have derived our foreign supplies; we have shown that we never receive cattle from Russia or the Upper Baltic, and that there is only one medium through which disease *may* be introduced here, viz.: Hamburgh. But Professor Simonds has, we find, discovered very little beyond what we have stated, and with which, consequently, our readers are already familiar: still it must be satisfactory to all parties to learn that personal observation has fully confirmed the statements which we have from time to time published on this important subject.

The continental cattle trade continues healthy, and we find that France is still a buyer of both beasts and sheep in Holland. From a return before us we find that the total imports of stock into France during the first five months of the present year were 140,000 head, against 139,000 head in the same time in 1856, and 132,000 in 1855. Whilst this enormous demand continues, France must of necessity lose a large portion of her bullion resources, and we shall be deprived of our usual supplies to meet consumption. This, it must be admitted, is a strong argument in favour of steady prices.

Compared with last season, the arrivals of foreign stock into London during the past month have been moderately good. They have amounted to 970 beasts, 9,461 sheep, 941 lambs, 2,087 calves, and 92 pigs—forming a total supply of 13,551 head, against 10,136 head in the same period of 1856.

The total supplies of stock shown in the London market have been:—

Beasts	20,063	head.
Cows	470	,,
Sheep and lambs	108,480	,,
Calves	2,404	,,
Pigs	2,125	,,

SUPPLIES AT CORRESPONDING PERIODS.

June.	Beasts.	Sheep and Lambs.	Calves.	Pigs.
1854	18,921	131,660	2,919	2,670
1855	19,173	125,570	2,209	3,180
1854	17,896	112,110	1,839	2,740

From Norfolk, Suffolk, Essex, and Cambridgeshire about 10,000 beasts have come to hand, and which are included in the above supplies. The arrivals from other parts of England have been 2,500 oxen; from Scotland, 600 Scots; and from Ireland, 56 oxen. From the latter country very few sheep have come to hand, but nearly 2,000 lambs in fair condition have been received. This is, we believe, the largest number ever received in London in one month.

From all parts of the country, very favourable reports continue to reach us respecting the health of both beasts and sheep. The abundant supply of old hay still on hand and the large amount of food on the pastures are features of no ordinary importance at this period; whilst the prevailing fine weather for securing the new crop of hay—which promises to turn out large—is a matter of equal importance.

Owing to the hot weather, only limited supplies of country-killed meat have been received up to Newgate and Leadenhall markets. The trade generally, however, has ruled heavy, and prices have had a downward tendency. Beef has sold from 2s. 8d. to 4s. 4d.; mutton, 2s. 10d. to 4s. 8d.; lamb, 4s. 10d. to 6s. 4d.; veal, 3s. 4d. to 4s. 8d.; pork, 3s. 6d. to 5s. per 8lbs., by the carcase.

NORTH NORTHUMBERLAND.

During the five weeks elapsed since we very briefly noted farming routine from this district, we have, as usual, experienced various atmospherical changes; the last two weeks in May, fine and genial for sowing and vegetating the Swedish turnip, a large breadth of which was put in and now showing a good healthy plant. Until the 6th inst., field operations were followed up without hindrance; from the 7th to the 12th, rain fell almost incessantly; consequently, all field labour was suspended a full week, and on some situations sowing of turnips has been given up as hopeless. On loamy soils where reduced before the wet, it has become too clammy for any chance to reduce to turnip tilth, although we in the far north can boast of many improvements in the shape of pulverizers, and generally are not illiberal in either home-made or artificial manures. No doubt in a season when the demand has overdone supply, large quantities of spurious (so called) fertilizers will be puffed off, and vended amongst our unsuspecting brethren. Potatoes braird healthy, and a more than usual breadth has been planted, as notified in our last. Potato husbandry has been introduced into the rotation on a more liberal scale than usual in this county, by a few enterprising Scotch gentlemen, who have leased some large farms on this side of the Tweed: we heartily wish them success with what to us has for many years proved a very precarious assistant to fill up the rent-roll. As a move in progression, we noticed, two or three years ago, the introduction of the reaping machine, by an enterprising native of the county, and believe he has very successfully harvested his crops by working it most efficiently. A few weeks past we had the pleasure of seeing Fowler's steam plough in full operation, working on a very tenacious subsoil on the same farm, first introduced to this county by Mr. Maddison, after completing fields contracted for on his farm. The steam-horse has been liberally employed on the banks of the Tweed, and is now in full operation on a large farm in a central part of Bamboroughshire. Some time is lost in shifting fixing apparatus, &c.; but once set a-going, where the soil is free from large stones, the work goes on with great precision, turning four furrows seven to eight inches in depth, by a medium breadth of ten to twelve. While on this theme, we may mention another, quite as profitable an instance of native industry. The sale of fat bullocks at Rockmoor House came off on the 15th, under the hammer of Mr. Donkin, when 48 (including six or seven small beeves) were knocked down at an average of £29 15s. 6d. each; all finished on a farm where a few years ago a full-fed beast or sheep was the exception: the sale comprised altogether 81 fat cattle and 700 sheep, part of which were from the farm of a friend adjoining: the entire stock did great credit to the owner. Our space barely allows limit for more than simple allusion to our prospects. That the forthcoming crop will be various, and very much of the wheat thin and sickly, is now placed without reasonable doubt. Oats on light or loamy soils looked very promising for a full return, until after the late deluge of rain : they now seem fast at the neck, are losing colour, and standing too much erect. Barley has a more healthy appearance. Beans generally good, where sufficient power is at command to keep them clean. Peas very middling. Whether by insect or slug, the pea and red clover are equally and almost an entire failure. Hence our hay crops will cut up unusually light: the weather has been extremely seasonable for this crop. Italian and Ayrshire seeds have pushed out to great length; but in the almost entire absence of clover, the crop will fall thin. Meadow hay will be a great crop; old pastures and swards of all descriptions were never better at any season: nor have we had a breath of cold withering wind since May 12. The failure of clover and weak spiry wheat crops to be seen renders a singular result. Our provincial market returns still show unmistakable results of our last harvest. Wheat selling at all prices from 9s. down to 3s. per imp. bushel; a lesson for the agricultural student about to start farming to make margin for incidentals.—June 19.

NORTH RIDING OF YORKSHIRE.—CLEVELAND.

Since our last we have had weather of a brilliant description, the only complaint made is by clay-land farmers, it being too dry for the brairding of their turnips. However, from the 7th to the 11th inst. we had a considerable fall of rain, and its effects on lands sown at all in favourable condition has been very favourable, brairding the seed where sufficient moisture did not exist to accomplish that, and refreshing and stimulating the sun-parched and fly-bitten plants already above ground. Since then we have had it very dry and warm, and would now be all the better for a little more rain. It has been a month of favourable weather for wheat, and consequently the plant has made good progress. As we previously reported, that sown on dry and well conditioned soils looks extremely well; while that on wet and secondary sorts of land looks very thin and meagre; and as tillering time is now past, we fear that as far as bulk is concerned, many of us will fall short of average years. The plant, however, generally seems of a good colour and healthy, and we can only hope that what we may want is bulk may be met by a good yield and quality. We have adversely to report of the appearance of the oat crop. There has not been a worse prospect for oats here for some years. Some fields have been resown, and others we see standing will not be more than half a crop. Beans generally are backward and the accounts of them are by no means flattering. The late rains have much improved pastures, which were very short and wanted wet much. Our meadows cannot now turn up a heavy swathe; the weather being too long dry for the full development of the grasses. The appearance of the potato so far seems satisfactory. Fat stock have been ruling at high figures; prime beef making 9s. per 14lbs. It is now, at this date, a little easier to buy. Mutton has been worth 8½d. per lb., out of the wool; it also is a shade lower. We have not yet done much in the wool trade, but the top price for Leicester half-hog and half-ewe is 18d. per lb., and ruling as low as 16d. per lb. Lean stock sells at unprecedentedly high prices: we cannot see how farmers can make it pay to purchase; but the business is, those that have grass must have it eaten, and consequently must buy, be the price what it may.—June 18.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ABINGDON FAIR kept up its character for the production of splendid cart colts, and there were also many good cart horses, the whole or greater proportion of which soon changed hands at high figures, but the vast number of inferior animals remained unsold at a late hour of the day. We have seen more first-rate cow cattle offered, but never remember a better trade, anything at all strong and useful being caught up early, at most remunerative prices. Of sheep stock not less than 3,500 of ewes and lambs, and many of them of first-rate quality, the greater proportion half-bred lambs, were exhibited, many lots of which sold quickly at from 28s. to 32s. per head, but from the paucity of dealers attending this fair, several pens of the best lambs were driven home again unsold. There was much inquiry for young and good ewes for breeding stock.

ALDBOROUGH FAIR.—There was a good show of fat beasts, and a few sheep, but very little business transacted in consequence of the high prices asked.

BALGAIR MARKET.—The numbers were fully more than last year, but the stock was not in the same condition, more particularly the heifers. There were few two-year-old stots, and what was good of them were readily bought up. If there had been double the quantity of this kind of stock they they would have met a ready market, arising from a plentiful supply of grass. The heifers, being the largest part of the stock, did not meet the same encouragement as the stots; but when the stots were picked up the attention of buyers was directed to the better class of heifers. At the close of the market a few lots of inferior heifers remained unsold. Three-year-old West Highland heifers ran from £6 to £8 8s.; two-year-olds, from £5 10s. to £6 15s.; three-year-old stots, from the same country, from £8 to £11 11s.; and two-year-olds, from £6 to £7 15s. The heifers advanced about 15s. a head above last year's prices, and the stots about 20s. There was a plentiful supply of milk cows, more particularly Ayrshires, which met a fair market. So high as from £18 to £19 were got for several, and many exchanged hands at from £13 to £15. It was allowed that this kind of stock advanced about ten per cent. above last year's prices. The show of tups was very large, entirely composed of Highland stock. The demand was very fair, but there were a good number left unsold. There were few horses, the only dealer with a stud being Mr. Walker, of Stirling, who sold a few draught and saddle horses at prices fully higher than was got at Gifford on Tuesday last. Mr. Youll, of Glasgow, was the principal buyer, and made a few purchases among the draught horses at prices ranging from £30 to £42. The bulk of the horses on sale by farmers were all but picked up.

BEDALE FORTNIGHT FAIR.—We had an unusually large supply of all descriptions of stock, which had slow demand. Holding stock and in calvers were easy to buy. Beef, 7s. 6d. to 8s. 3d. per stone; mutton, 6½d. to 7d. per lb.

BOROUGHBRIDGE FAIR was very largely supplied with lean and half-fed cattle, in which a considerable business was done, but with a downward tendency. The show of horses was indifferent, both in quantity and quality. The dealers were not very keen buyers, it being understood that their needs were not urgent. Horses adapted for agricultural purposes have the best demand, and animals of merit realize remunerating prices.

BRODICK FAIR.—There was a good supply of cattle, the average quality of which showed a considerable improvement upon former seasons. As is usual at this gathering, fabulous prices were asked for all description of animals. Milk and farrow cows sold at rates ranging from 5*l.* to 8*l.* Young cattle and yearlings were very dear—few being sold under 6*l.* 10s. and 7*l.* each. Fed calves were eagerly sought after by butchers from Glasgow and the towns on the west coast, and sold quickly at from 12s. to 13s. per stone. For horses exorbitant prices were asked, one very diminutive animal being offered at 40*l.* From about 30*l.* to 40*l.* were the current rates. Sheep and lambs sold slowly, the latter at from 2s. 6d. to 7s. each.

CONSTANTINE FAIR.—There was an average supply of cattle and sheep. Cows and calves realized 63s. per cwt.; fat cows, 65s. per cwt.; sheep, 7½d. to 8d. per lb.; lambs, 7d.

DUNNING FAIR.—The show of cattle was not numerous.

A fair amount of business was done, and prices were very high.

HORNCASTLE FAIR.—There was only a very small fair. The show of horses was only moderate, and the cattle and sheep were limited Prices ruled about the same for sheep, but cattle suffered a reduction of from 1*l.* to 2*l.* a head.

KIDDERMINSTER FAIR.—There was scarcely an average supply of sheep. Cattle was very scarce, especially in fat stock, of which there was a very poor show. Prices were high; 7½d. being asked for beef, and from 7d. to 7½d. for mutton. Buyers were few, and not inclined much to purchase. Hardly any business was done, most of the cattle and sheep remaining unsold.

KIRBY HILL FAIR.—The supply was large, and business exceedingly dull, many lots being turned out unsold and driven to York fortnight fair on the following Thursday.

LLANDILOES FAIR.—There was a moderate show of cattle, which were all sold at extremely high prices. For instance, two small bullocks were sold for 13*l.*, which some few years ago would not have fetched 4*l.* Horses also sold well.

MAIDSTONE FAIR.—We had an average show of good stock and of horses. There were very few pigs, and no sheep were sent. For beasts and horses large prices were demanded, and in consequence very little business was done.

MONTGOMERY FAIR was thinly supplied with stock, but the buyers were numerous. Good beef made fully 7d. per lb.; shearling mutton, 7d. to 7½d.; lamb, 8d.; good couples sold at high rates; pigs had a downward tendency. Cows and calves very dear; store beasts of all descriptions realised high prices. We noticed a pen of excellent yearling wether sheep, from Mr. Gardner's, of Dudston, which were sold at 49s. per head. Mr. Gardner's stock is much appreciated at all times in this market.

MUIR OF ORD MONTHLY MARKET.—The number of sheep was trifling. The show of cattle was a good one for a June market. Good cattle, however, were scarce, and a large proportion of those shown were inferior animals in small lots. Sales of good lots went on briskly from the commencement of the market at a slight advance on the prices of last month, and almost every such lot changed hands in the course of the day. The recent seasonable rains, by which the grass crops have so greatly benefited, affected prices, both increasing the demand for cattle and diminishing the supply. For Highland cattle, however, and inferior lots, the demand was slow, and prices accordingly fell. The large dealers from Caithness complained that they would not "make their own money" by the sales: and the decline of prices and of demand at the recent Dumbarton market seems to have damped the ardour of purchasers. Another cause of the slowness was the absence of those south country dealers, who are usually large purchasers of Highland cattle. A good many lots remained unsold at the close. Very few agricultural horses were shown, but there some good saddle and gig horses. Apparently a good many had come to purchase horses, and prices went up on account of the scarceness.

NEWARK FORTNIGHTLY MARKET.—The supply of beef and mutton plentiful, and the sale somewhat heavy at recent prices. Beef, 7s. 6d. to 8s. 9d. per stone; 6½d. to 7½d. per lb. There were 1,095 sheep, and 66 beasts penned in the market.

NEWTOWN FAIR.—The number of stock exhibited was not large. Attendance of buyers tolerably good. In order to effect sales in sheep and pigs lower prices were taken. In cattle of all sorts a good business was done at full prices. Good horses and ponies sold well at high prices.

NORTHAMPTON FAIR.—There was but a short supply of fat or store sheep. Best fat mutton made from 4s. 6d. to 4s. 9d. per 8 lbs.; fat ewes from 4s. 4d to 4s. 6d. Trade dull. Fat lambs rather scarce, with a slow trade, made about 6s. per 8lb. A limited supply of fat beast; best fat beef made from 4s. 6d. to 4s. 8d. per 8lbs., most were sold Store beast also scarce. There were some very useful down-calving cows. In new milch cows the supply was large, with a dull trade, at from 1*l.* to 2*l.* per head less money. Horse fair thinly supplied.

PENRITH FORTNIGHTLY MARKET. — An average supply of cattle and sheep, which met with a brisk demand, at prices equal to last fortnight. A fair show of lambs, which brought from 23s. to 26s. per head.

PENZANCE FAIR.—The business part of the fair on Thursday was a very slight matter—the show of bullocks and horses the smallest we have seen for six or seven years. Mr. Williams, of Perran, and Mr. Sealy, of Marazion, had some fine bullocks for sale. We heard but one quotation—fat cattle, 70s. per cwt. The horses were on the whole a poor lot; prices from £7 10s. to £42.

RETFORD FAIR.—This fair, so far as the show of stock was concerned, was a very large one. Most of the store beasts having got into hands of the dealers they were of course desirous of keeping prices up; but the weather being against them when sales were effected, stock was fully 1*l.* per head lower than they were a fortnight back. There were few buyers and many remained unsold. In-calvers may be quoted at from 16*l.* to 18*l.* each; but some of the very best realized as much as 22*l.* per head, with only very few in, still they were fully 2*l.* to 3*l.* per head lower. No three-year-old steers were exhibited. Two-year-olds may be quoted from 8*l.* to 11*l.*, and yearlings 5*l.* to 7*l.* per head. The quantity of fat stock exhibited was not large, and for which there was a fair sale at from 8s. to 8s. 6d. per stone. About 350 sheep were penned, most of them fat ones, which sold at from 7d. to 7½d. per lb. Six splendid gimmers were shown belonging to the Rev. T. Cheadle, of Dunham, and were purchased by Mr. Foottit, butcher, of Rampton, at nearly 3*l.* each. There were several young calves exhibited of various degrees of quality, varying from 20s. to 40s. each, but the average prices may be fairly stated at 30s., with a good sale. No woolled sheep in, except a few Cheviots. A few ponies and "screw" horses were exhibited, which realized good prices. Much stock was ultimately driven away unsld.

ROTHERFIELD FAIR was well attended. Upwards of 700 Welsh runts, as well as a considerable number of home stock, were present, and good prices were obtained for those which changed hand; but not a great amount of business was transacted.

RUTHERGLEN FAIR.—The show of horses was excellent, but business was very dull. The prices had a decided tendency downwards, and the average prices of even the best draught horses did not exceed £50, while good serviceable animals were readily procured at £30 and arupwds.

SHREWSBURY FORTNIGHTLY MARKET. — The best fat beef sold readily at 7d. per lb.; fat calves, 6d. per lb.; fat sheep, 7d. per lb.; fat lambs, from 18s. to 25s. each; good couples sold well; useful store cattle in great request, and good cows with calves at high prices; pigs considerably lower in price.

STAMFORD FAIR.—The show of all kinds was not large. A few fat beasts were shown, but the prices asked (8s. 6d. to 8s. 9d. per stone) were so high that buyers could not be found. Store beast were cheaper. The prices for sheep were lower by several shillings per head. Very useful lamb hogs were sold at 48s. Very few horses of any value were offered, and sales of any kind in this department were merely nominal.

TADCASTER FORTNIGHTLY MARKET.—We had an average supply of stock. Beef, 7s. 9d. to 8s. 6d. per stone; mutton, 7d. to 7½d.; lamb, 9d.; veal, 7d. per lb.

TAUNTON FAIR was well attended. Beef fetched from 11s. to 11s. 6d. per score; steers from 20*l.* to 40*l.* per pair. bulls, 9*l.* to 12*l*, each; cows and calves, 10*l.* to 18*l.*; barreners sold readily at good prices. The number of sheep penned were much larger than those last year, and prices bettter. Not a large number of horses, but the supply of those for draught was good, for which high prices were obtained, 30*l.* to 40*l.* each. Nags were offering at prices varying from 25*l.* to 40*l.*, and good ones were readily purchased. Altogether, the fair was a very satisfactory one.

WADEBRIDGE FAIR was not so fully supplied with cattle as usual, yet a considerable number of those exhibited remained unsold. It was evident throughout the day that the extraordinary prices realized at some of our recent country fairs could not be supported, and this deterred many persons from purchasing. The demand for sheep was dull, those sold fetched 6½d. per lb.

YORK FORTNIGHT MARKET. — Calving and dairy cows were in fair supply and demand, at about former rates. All descriptions of grazing beast were in supply greatly above demand, at from 20s. to 40s. per head below former rates, according to their several qualities. Fat beasts were abundant, at from 7s. 6d. to 8s. per stone. Mutton sheep were plentiful, at from 5½d. to 6¼d. per lb. Grazing sheep had a very dull sale, at heavy rates.

IRISH FAIRS.—CARLOW, Monday: This fair, which was held on this day, was a very excellent one for both buyers and sellers. A very large quantity of young stock was offered for sale, and the prices realized were rather high. Fat stock was exceedingly scarce, and what was exhibited met a ready sale at good rates. Sheep were in fair demand. The bacon fair was held on Saturday, and prices were very good for breeders; store pigs sold at about 58s. a cwt. DROGHEDA, Monday: The June fair of Drogheda was held to-day, under the most favourable circumstances. Store cattle were very plenty, and in brisk demand, especially for bullocks. Some good two-year old bullocks were sold from £9 to £12 per head, and yearlings from £6 to £7 10s. each. In the sheep department of the fair there was evidence of a scarcity with high prices; for instance, lambs of the weight that brought a guinea last year would be value to-day for from 25s. to 27s. each. Wether mutton was 7d. to 7½d. per lb.; ewe ditto, 6d. to 6½d per lb. The buying was brisk during the day. In the swine fair the supply was immense, with a great demand for small pigs. Store slips brought from £1 to 55s. per head, and bacon may be noted at 10s. per 20lbs. In the wool market I observed a larger quantity of that commodity than was exhibited this time twelvemonth. Black wool by retail was from 2s. to 3s. per lb. for best kinds, and white ditto (good) 23s. per stone, say from 22s. to 22s. 6d. per stone by the pack. The demand for this article was remarkably brisk, and a general animation pervaded the market during the entire day. Fresh butter quotes at 10d. per lb. as an average, and crock buter at 9½d. per lb.—*Saunders.*

REVIEW OF THE CORN TRADE.

DURING THE PAST MONTH.

The month of June has exhibited great fluctuations in the weather, with more of cold and dryness at the commencement than was quite suitable to the growing crops, especially to spring corn, as well as to the wheat on light and very heavy lands; but the third week being visited with heavy thunder showers, followed by a forcing sun, there is again a more favourable prospect as to the general yield, though heavy crops can hardly be expected, the time for tillering out being past. A frost having been experienced on the night of the 12th, it was well the wheat was not then in ear. The markets throughout the month have shown more buoyancy and decision than for some time past, the opening of the canals in America for more than six weeks proving that heavy supplies of wheat from that country cannot be again expected, and the Baltic arrivals, as well as prospects in that quarter, being also comparatively small, while the long war in Southern Russia has greatly diminished expectations thence. Scarcely a week has passed without being in growers' favour, and the month's gain may be held at 4s. to 5s. per qr. The circumstance that the last crop was generally gathered in bad condition, and that America sent abundant stores in splendid order all through the autumn, made the sales of English produce slow, and the weekly sales nearly throughout the season being below those of last year, leave the inference that present stocks are proportionately good, and with about four million qrs. received in foreign imports since last July, it seems fair to conclude that they will prove sufficient for the short period between now and harvest, with the help of perhaps four or five hundred thousand qrs. more in the interim. This would bring us to the position of "an average crop," with "an average importation," which for the last six years has been 4,775,000 qrs. in wheat and flour; but as the population has kept increasing, it is equally clear that there must be an increased consumption, leaving but small stores at the season's close for mixing with the new crop. The weather, therefore, will determine future prices, which now being remunerative, we think will not be declined; indeed, of late this seems to be indicated by the more free deliveries noted in the weekly sales. Should the Southern States in America be again in condition to ship early (and as everything looks fair at present, they may), there may be something like a renewal of the free shipments of last autumn; it therefore seems prudent to keep selling, though the averages are about 17s. per qr. less than in June, 1856. Algeria, Egypt, and Italy have already commenced reaping. There seems little doubt that the restrictions upon exports in the Roman States will soon cease, while Russia has had breathing time again to till her immense area of wheat-producing land. The wants of Spain are yet scarcely satisfied, and with deficient stores there, and perhaps hardly an average crop, it is not expected that this country will resume her station as a source of supply. Flour at Santander is about 10s. per sack beyond our own, prices there being about 64s. per sack English. At Madrid prices of wheat were still 97s. to 110s. per qr. In other countries prices keep high. In Paris white Normandy wheat is worth about 66s., and red 62s. per qr. At Antwerp native red was about 62s. per qr. Weak white Zealand wheat at Amsterdam has brought about 61s., and good red 64s. per qr. Hambro' quotations for red Holstein wheat, 56lb. to 59lb. per bush., were 49s. to 56s. per qr.; Upland, 60lb. per bush., 64s. The market at Rostock, for red wheat of last year, 60lb. per bush., was 54s. 6d. Petersburg quotations for Cubanka were 63s. 7d. on the spot, and 57s. 6d. per qr. for August. At

Galatz, on the Danube, first quality wheat was held at 42s.; Ibraila and Kalafat at 43s. 8d. per qr. At Odessa the best soft wheat was about 55s. per qr. Crops were promising in this neighbourhood, and markets had a downward tendency. At Trieste a good deal had been doing, Banat wheat bringing 58s. 8d., and Berdianski 65s. 6d. per qr. Prices in Leghorn had fallen about 5s. per qr.; still, Polish wheat was quoted 55s. per qr. The market was in rapid decline at Algiers, in consequence of fine harvest weather; but, with small stocks, hard wheat, by last advices, was worth 66s. 6d. per qr. All through the French possessions in Northern Africa, a large produce was calculated on; but nothing for sale was expected earlier than the middle of July, and it was most probable that Marseilles would use up all there was to spare. At New York stores continued light, and prices too high for profitable export. Indiana red wheat was 1 dol. 67c. per 60lb. =56s. 9d. per qr.: choice Southern and Missouri white, 1 dol. 90c. per 60lb.=65s. per qr. The weather in Northern Europe had been rather cold and dry, and quite against a full average of rye, which was the great article of consumption; and the circumstance was calculated to increase the value of low-quality wheat.

In Scotland there had been more rain than in the South; and the weather was very favourable. Accounts from Ireland show that all former fears were at an end, and giving way to satisfaction, as to the progress of the growing crops, which generally looked magnificent.

The following shows the course of the wheat trade in the Metropolis during the past month: The first Monday opened with good supplies of foreign wheat, chiefly from St. Petersburgh and Cronstadt, and about an average of home growth. The advance with which the previous month closed was then not only maintained, but another shilling gained over previous rates, though the buoyancy of the former Friday was lost. Foreign sold, without much readiness, at an equal improvement; and this state of things lasted through the week, with considerable foreign arrivals. Liverpool, on the other hand, wrote the market 2d. to 3d. down per 70lb., with only a retail trade; and on the following Friday a further fall of 2d. was announced. The country markets generally only experienced a check to the readiness of sales, as the consequence of fine weather; but Nottingham, Leicester, and Lincoln were 1s. per qr. cheaper; and St. Ives, with but an average quantity on show, fell 2s. per qr. The second Monday, with the heavy foreign supplies of the previous week, and fair arrivals of our own growth, having but a limited addition of samples from Essex and Kent, did not abate the claims of factors, who firmly held for last week's prices, notwithstanding a fine fall of rain. This applied to the foreign trade, as well as English. As the week advanced, foreign supplies fell off greatly, and the confidence of holders increased; so that, at the close, buyers of fine English, as well as of other qualities, found prices against them. Liverpool, on Tuesday, still showed some depression, a further concession having to be made on samples of Baltic wheat, to the extent of 1d. to 2d. per 70lb., from the previous se'nnight; but American samples nearly recovered the decline of that day. Friday closed with a firmer aspect, though with only a retail trade, at 2d. per 70lb. over previous prices. The country markets evinced some difference in their quotations, being variously influenced by contrary accounts, but the general tone was upwards; Leeds, Boston, and Manchester being 1s. per qr. higher, and Birmingham, with Newbury, noting an improvement of 1s. to 2s. per qr.; but the Norwich market was so badly supplied that the rise was 3s. per qr. The third week being but moderately furnished, including the samples from Kent and Essex, there was a very lively trade at 2s. to 3s. per qr. more money: foreign being nearly equally improved, but without the same freedom of sales. The only subsequent alteration was an increased firmness on the part of foreign factors. Tuesday's advices from Liverpool did not answer to this state of things, the former week's prices being scarcely exceeded. Friday closed more decidedly against buyers. In the country, generally, there was an upward movement, though Birmingham realized no change, being largely supplied. Wolverhampton and Newcastle were only 1s. to 2s. per qr. up; but Bristol, Gloucester, Boston, Hull, and most important places, exactly tallied with the London advance of 2s. to 3s. per qr., and Norwich again, with a retail business, raised prices 4s. per qr. The fourth Monday found a dubious market; factors generally holding for 2s. advance, by which they set their samples aside, and the little business done was at scarcely anything above previous rates, excepting for certain qualities of foreign, which were improved 1s. per qr. Wednesday's market proved that Monday's effort to raise prices was unsuccessful, for the trade was excessively dull, at the rates of the 15th, and Friday was nearly as slow. Liverpool quoted rather lower prices, and generally there was scarcely any improvement to the week's close, the weather being sufficiently forcing to favour the idea of an early harvest.

As compared with the month of May, supplies have somewhat increased in English qualities, and considerably so in foreign: the increase of English has been about 3,000 qrs. as a total, and that in foreign 66,000 qrs., in consequence of the liberal arrivals in the second week. The exact amount of English for the four weeks was 31,593 qrs., and of foreign 86,136 qrs. Our anticipations respecting the averages, when at 53s., being then lowest, have been quickly realized, as 60s. has been reached in two months from that time; but the sales noted weekly show 46,757 qrs. more delivered than at the same period last year in four weeks, indicating the readiness of farmers to avail themselves of the advance.

We have again to note some exports, chiefly as the consequence of the continued claims of Spain on the eve of her harvest. They amounted in four weeks to 5,749 qrs. wheat, 829 sacks flour, 1,999 qrs. maize, and 1,776 qrs. barley.

The flour trade has become in an anomalous position, the town millers not having made more than 2s. advance during the month, leaving their highest price 54s.; while Norfolk qualities have fluctuated considerably, approximating at last to within 4s. of the value of the best town-made samples, the quotations commencing at 45s. and closing at 50s. American sorts have steadily improved in value, leaving off at about 36s. per brl. for fine. The near approach of country-made samples to town flour may be traced to the constant resolution of the millers in London to keep their stocks at the lowest point, and for the same reason to restrict their sales to old customers, it would appear with the hope of forcing down the price of wheat. Thus an increased demand has sprung up for inferior make, and the receipts being rather below the average, with little or no help by foreign imports, they have received an artificial value to the extent of the voluntary depression of the best qualities; but this is a state of trade which will soon right itself, and prove the fruitlessness of small combinations to control the value of corn. The price of wheat must necessarily set the value of flour as the labour of manufacture can little vary. The total receipts in four weeks from the country were 63,947 sacks, against 71,448 sacks in May, leaving the present month deficient by 7,501 sacks, both months being equally short in foreign, June having only 3,570 brls. and 512 sacks as a total.

The malting season being past, and the consumption of barley generally lessened, the foreign importations have just served in London to keep prices from an advance, which must have been extensive without them, the whole month's supply of home-growth being only 818 qrs., and the foreign reaching to 44,986 qrs., which is about 6,400 qrs. less than in May. Foreign countries, it would appear, are getting so low in stock that prices generally have advanced abroad, and we should not be surprised to see a retail consumption at enhanced rates; though maize is greatly increased in use as a substitute in this country, and seems likely still to find more favour. The late-sown barley has not hitherto promised well, but the rains must improve it.

Malt, like barley, has been unvaried in value, with a steady but limited sale. This month there have been 1,472 qrs. exported.

The past month has had a liberal foreign importation of oats; but the stocks being previously very small, this arrival has only temporarily lulled the markets, without effecting any reduction in the price of really good corn. Our calculation that very short receipts must come from Ireland this season has been fully justified. That country has such slender supplies in her own markets at this advanced period, that nothing but an improved range of prices can tempt shippers to send on any quantity. From Scotland, also, a mere trifle comes. Of English growth the arrivals are quite insignificant; so that Holland, Hamburgh, and the Baltic must be our dependence till the Archangel shipments come in; and any serious or long-continued decline, even on a glut or two, seems impossible. The crop is just saved by the late bounteous rains, or it must have been very deficient, and the crop of hay being, as far as yet carried, much lighter than expected, will serve to keep up prices. The imports into London in four weeks have been 1,491 qrs. English, 41 qrs. Scotch, 2,600 qrs. Irish, and 164,531 qrs. from abroad.

Beans, as well as barley and oats, have not varied through the month, and as the great source of supply—Egypt— has not hitherto been making shipments, and cannot till the new crop gets in, which commences at high prices, there seems no chance of the rates giving way; indeed, Alexandrian are already held for 1s. per qr. more money. The imports have been 1,968 qrs. of home-growth, and 2,080 qrs. foreign, in four weeks, which is about half the English supply in May, and double the foreign, though on the whole less than then by about 1,000 qrs.

In peas the trade has been quite retail, and prices have therefore been nominal, excepting for maples, which, from their great scarcity, and the fact that foreign of this quality are scarcely ever imported, have remained at 50s. per qr., which is 6s. per qr. higher than the value of boilers for human food. The last month has brought a store of these from the Baltic, to wait till the autumnal demand comes on. The total quantity of English peas, for the four weeks, has only been 197 qrs., while the white foreign has amounted to 6,820 qrs.

The linseed trade has become limited, as the consequence of the high range of prices. The fluctuations have been too small for quoting, and rates continue much as they commenced, with rather more firmness on the part of holders, from the smallness of supplies and few prospects as to ample receipts for the future. Bombay is worth 68s. to 69s.; cakes also serve to keep up the rates from the extensive demand experienced through the high price of meat.

Of cloverseed there remains too little stock for any large speculative business, and holders are content rather to wait the result of the growing crop than make sacrifices. Trefoil has been quiet neglected. Canaryseed has alone exhibited an upward tendency, and that contrary to expectation, there having been some foreign demand. Mustardseed and hempseed have also been full-priced; but till the new crop of the former, as well as of rapeseed, come in, there is likely to be little doing in either. Of good seed tares scarcely any samples are left, having been liberally used for feeding, from the high price of peas and beans. In carraway, coriander, and other small seeds, the business done has been at much the same prices.

CURRENCY PER IMPERIAL MEASURE.

Shillings per Quarter.

Wheat, Essex and Kent, white, new	54 to	65	extra	68 to	73
Ditto, red, ,,	53	60		63	67
Norfolk, Linc. and Yorks., red, new	54	60		63	67
Barley, new, malting	40 to	41	Chevalier	42	44
Distilling	37	39	Grinding	26	32
Malt, Essex, Norfolk, and Suffolk	67	72		—	77
Kingston, Ware, and town made	69	73		—	78
Brown	62	63		—	—
Rye	—	—		30	36
Oats, English, feed	21	26	Potato	25	32
Scotch, feed	20	25	Potato	27	33
Irish, feed, white	19	24	fine	24	31
Ditto, black	19	22	,,	—	25
Beans, Mazagan, new	34	39	Ticks, new	36	39
Harrow	36	40	Pigeon	43	47
Peas, white boilers	40	44	Maple .. 42 47..Grey	42	46
Flour, per sack of 280lbs., Town, Households	50s.		fine	53	54
Country	49	50	Households	51	52
Norfolk and Suffolk, ex-ship				47	48

FOREIGN GRAIN.

Shillings per Quarter.

Wheat, Dantzic, mixed	75	77	high do.	—	79	extra	—	82
Konigsberg	71	74	,,	—	76		—	80
Rostock	52	72	fine	—	75		—	78
American, white	62	69	red	—	—		60	65
Pomera., Meckbg., & Uckermrk, red				57	66		67	70
Silesian, red	52	58	white	—	—		65	72
Danish and Holstein				52	57		56	64
St. Petersburg and Riga				50	63	fine	64	67
Rhine and Belgium				—	—		—	—
Russian, hard	54	66				French	(none)	
Barley, grinding	26	31				Distilling	35	39
Oats, Dutch, brew, and Polands				20	28	Feed	18	24
Danish and Swedish, feed				19	25	Stralsund	22	26
Russian							22	26
Beans, Friesland and Holstein							37	39
Konigsberg				32	37	Egyptian	37	38
Peas, feeding				36	37	fine boilers	40	44
Indian Corn, white				36	39	yellow	36	39
Flour, per sack			French	—	—	Spanish	—	—
American, per barrel, sour				25	30	sweet	33	36

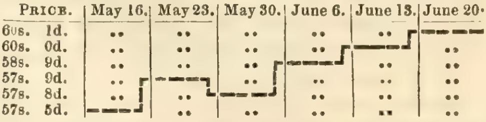
COMPARATIVE AVERAGES—1857-56.

From last Friday's *Gaz.*		s.	d.	From *Gazette* of 1856.		s.	d.
Wheat	102,780 qrs.,	60	1	Wheat	105,387 qrs.,	69	11
Barley	1,769 ..	38	11	Barley	4,122 ..	38	4
Oats	9,011 ..	26	7	Oats	12,171 ..	24	7
Rye	33 ..	40	6	Rye	111 ..	44	4
Beans	3,469 ..	44	10	Beans	3,583 ..	42	9
Peas	389 ..	42	8	Peas	343 ..	41	0

IMPERIAL AVERAGES.

For the last Six Weeks:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.	Rye. s.	d.	Beans. s.	d.	Peas. s.	d.
May 16, 1857	57	5	43	6	24	9	41	6	42	6	40	10
May 23, 1857	57	9	42	8	24	11	39	7	43	8	42	3
May 30, 1857	57	8	41	10	25	3	40	9	44	8	42	0
June 6, 1857	58	9	41	8	26	2	40	10	44	3	40	5
June 13, 1857	60	0	38	9	26	5	36	0	44	3	42	11
June 20, 1857	60	1	38	11	26	7	40	6	44	10	42	8
Aggregate average	58	7	41	3	25	8	39	11	44	0	41	10
Same time last year	68	8	39	0	24	0	44	4	42	4	40	0

FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT



MONTHLY RETURN.

An Account shewing the Quantities of Corn Grain, Meal, and Flour, imported into the United Kingdom, and admitted to Home Consumption, in the month of May, 1857.

Species of Corn, Grain, Meal, and Flour.	Imported from foreign Countries.			Imported from British Possessions out of Europe			Total.		
	qrs.	bush.		qrs.	bush.		qrs.	bush.	
Wheat	193836	3		2442	2		196278	5	
Barley	218160	7		..			218160	7	
Oats	84564	3		..			84564	3	
Rye	8282	6		..			8282	6	
Peas	16121	2		7	2		16128	4	
Beans	31610	5		..			31610	5	
Maize or Indian Corn	102504	4		..			102504	4	
Buck Wheat	5	6		..			5	6	
Beer or Bigg	..			..			..		
Total of Corn and Grain	655086	4		2449	4		657536	0	
	cwts.	qr.	lb.	cwts.	qr.	lb.	cwts.	qr.	lb.
Wheat Meal and Flour	189142	2	0	30	0	0	189172	2	0
Barley Meal	4	0	0	..			4	0	0
Oat Meal	17	0	4	..			17	0	4
Rye Meal	0	1	6	..			0	1	6
Pea Meal	1	0	0	..			1	0	0
Indian Meal	190	1	0	0	0	20	190	1	20
Buck Wheat Meal	14	2	0	..			14	2	0
Total of Meal and Flour.	189369	2	10	30	0	20	189399	3	2

PRICES OF SEEDS.

BRITISH SEEDS.

Tares, per bushel	4s. 6d. to 5s. 0d.
Mustardseed, per bushel	12s. to 13s.
Coriander, per cwt.	20s. to 24s.
Canary, per qr.	72s. to 86s.
Linseed, per qr., sowing —s. to —s...crushing	70s. to 71s.
Linseed Cakes, per ton	£9 10s. to £10 0s.
Rapeseed, per qr., new	86s. to 88s.
Rape Cake, per ton	£5 0s. to £5 10s.

FOREIGN SEEDS. &c.

Tares, per bushel, new	4s. 3d. to 4s. 6d.
Hempseed, small, per qr. .... —s. to 44s...Do. Dutch	46s.
Coriander, per cwt.	15s. to 20s.
Carraway ,,	42s. to 46s.
Linseed, per qr., Baltic..68s. to 71s...Bombay	70s. to 72s.
Linseed Cake, per ton	£9 10s. to £10 0s.
Rapeseed, Dutch	76s. to 80s.
Rape Cake, per ton	£5 0s. to £5 10s.

HOP MARKET.

BOROUGH, MONDAY, June 29.—The general accounts received this morning from the plantations report a considerable increase of vermin: and the indications of a severe blight are more apparent. Our market exhibits much firmness, with a fair demand for fine qualities, at fully last week's rates. Duty £130,000.—HART AND WILSON.

EAST RETFORD, NOTTS.—NORTH CLAYS.—During the past week the weather has been highly propitious for the growth of the bines, which are now throwing out their midsummer shoots. The bines appear very healthy in the Welham hop yards, and there is some hope entertained that there will be a fair average crop. Hot summer weather, according to the experience of the North Clay hop-growers, is always suitable and necessary towards the growth of this fickle plant in this district, and in former years had been conducive to the growth of good and heavy crops.

TUNBRIDGE, June 25.—The warm weather of the past few days has had a favourable effect on the plant, although in many places the bine appears to be weak and the leaf much discoloured. The accounts are exceedingly conflicting; while some of the planters are disposed to look hopefully on the prospects of the next crop, others are of opinion that it will be below the average. There is still a considerable quantity of lice and fly, although much checked of late.

PEMBURY, June 24.—The bine in this parish has grown considerably within the past few days, and is, on the whole, satisfactory.

FRANT.—The bine has not yet topped the poles in most plantations; although the genial weather of the last few days has had a beneficial effect. Plenty of vermin.

GOUDHURST, June 25.—We are improving in some grounds, while others are considerably worse; we still say a short crop.

PEASMARSH, June 25.—The hop-bines are loaded with vermin.

PLAXTOL, June 25.—We can still report favourably of the state of our hop grounds.

WEST PECKHAM, LOWER BOROUGH.—The hop-bine in this neighbourhood has grown rapidly during the past week.

BENENDEN, June 25.—Our bine is looking pretty well; we have, however, much lice in some grounds.

STAPLEHURST, June 25.—There is considerable lice to be found on some grounds, but on the whole a favourable progress has been made during the past week.

HARTFIELD, June 25.—The fly has certainly decreased, but we have an abundance of lice; still the bine grows nicely, and seems to have benefitted by the late thunderstorm.

LAMBERHURST, June 25.—The late warm weather has greatly improved the appearance of the hop gardens, but there is still a considerable supply of vermin, which must produce an injurious effect. Opinions are various as to the expected crop.—*Sussex Express.*

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

LONDON, MONDAY, June 29.—For the time of year, the supplies of old potatoes are moderate; but there is now no demand for them, except from cowkeepers, who have taken off some quantity at from 20s. to 25s. per ton. The imports from abroad last week were 9,232 baskets from Rotterdam, 2,531 from Scheidam, 787 from Antwerp, 43 from Corunna, and 50 boxes from Oporto.

COUNTRY POTATO MARKETS.—YORK, June 20.—Potatoes 10d. to 11d. per peck, and 3s. to 3s. 3d. per bush. LEEDS, June 23.—We had a fair show of potatoes, which sold at 14d. to 15d. wholesale, and 15d. to 16d. per 21lbs. retail; new ditto 2d. to 2½d. per lb. SELBY, June 22.—New potatoes, 2s. 9d. to 3s. per 21lbs. THIRSK, June 22.—Potatoes, 10d. to 14d. per stone. RICHMOND, June 20.—Potatoes, 5s. 4d. per bushel. SHEFFIELD, May 23.—Potatoes, 16s. to 20s. per load of 18 stones. MANCHESTER, June 25.—Potatoes, 6s. to 16s., new 20s. to 36s. per 252lbs.

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.:	s.	s.
Friesland	92to	94
Kiel	96	100
Dorset	98	100
Carlow	—	—
Waterford	—	—
Cork,	88	100
Limerick	84	90
Sligo	90	100
FRESH, per dozen..11s. 0d. to 13s. 0d.		

CHEESE, per cwt.:	s.	s.
Cheshire	78	84
Cheddar	74	84
Double Gloucester	60	74
HAMS, York— —.... new	90	100
Westmoreland	90	100
Irish	84	96
BACON:		
Wiltshire, dried	84	86
Irish, green	70	76

BELFAST, (Friday last.)—Butter: Shipping price, 92s. to 98s. per cwt.; firkins and crocks, 10d. per lb.; Bacon, 63s. to 68.; Hams, prime, 84s. to 90s., second quality, 70s. to 76s. per cwt.; prime mess Pork, 100s. per brl.; Pork, 50s. to 58s.; Beef, 100s. to 120s. per tierce; Irish Lard, in bladders, 76s. to 80s.; kegs or firkins, 68s. to 70s. per cwt.

WOOL MARKETS.

BRITISH WOOL MARKETS.

LONDON, MONDAY, June 29.—We have not the slightest improvement to notice in the demand for any kind of home-grown wool; nevertheless, holders generally are firm in their quotations. South country wools are likely, however, to be pressed for sale, as the supply is increasing, and as the country markets have gone off heavily. The average price paid at Leicester, last week, was 41s. 3d. per tod. The export demand is still very languid, although money on the continent has become easier.

Per pack of 240lbs.

Fleeces—Southdown Hogs	£18	10 to	£19	10
Do. Half-bred Hogs	18	0	18	10
Do. Kent	17	0	18	0
Do. Southdown Ewes and Wethers	17	0	17	10
Do. Leicester do.	16	0	17	0
Sorts—Clothing, picklock	22	0	23	0
Do. Prime and picklock	19	10	20	0
Do. Choice	18	0	19	0
Do. Super	17	0	18	0
Do. Combing—Wether matching	22	0	23	0
Do. Picklock	19	10	20	0
Do. Common	16	0	17	0
Do. Hog matching	23	10	24	0
Do. Picklock matching	20	10	21	10
Do. Super do.	17	10	18	10

LIVERPOOL WOOL MARKET, JUNE 27.

SCOTCH WOOL.—The stock of laid Highland is in the smallest possible compass: not more than 100 sheep's in the market altogether, and any retail trade going forward is at full prices. White Highland none in the market. There is only a moderate demand for Cheviot and cross, with rates, however, well supported.

	s.	d.	s.	d.
Laid Highland Wool, per 24lbs.	16	0 to	17	0
White Highland do	18	0	20	0
Laid Crossed do..unwashed	18	0	20	0
Do. do..washed	19	6	20	6
Laid Cheviot do..unwashed	19	6	22	6
Do. do..washed	23	0	26	0
White Cheviot do..washed	38	6	40	0

FOREIGN WOOL.—There being a limited supply, there are few transactions; but in the last few days of the week there have been a great many callers for Wool, who seem anxious to get into stock. Public sales are to take place here on the 4th of July and following days, when about 6,000 bales of East India, and a couple of hundred bales and bags of other sorts will be offered.

MANURES.

PRICES CURRENT OF GUANO, &c.

PERUVIAN GUANO, (per ton, for 30 tons) nominal	£13	5	0 to	£	0	
Do. Do. (under 30tons)	14	0	0		0	0
BOLIVIAN GUANO none	0	0	0		0	0

ARTIFICIAL MANURES, &c.

Nitrate Soda (per ton)	£22	0	0 to	£23	0	0
Nitrate Potash or Saltpetre	29	0	0	30	0	0
Sulpht. Ammonia	17	10	0	18	10	0
Muriate ditto	22	0	0	23	0	0
Superphospht. of Lime	6	0	0	0	0	0
Soda Ash, or Alkali	0	0	0	8	0	0
Gypsum	2	0	0	2	10	0
Coprolite	3	15	0	4	0	0

	£	s.	d.	£	s.	d
Sulph. of Copper or Roman Vitriol, for Wheat steeping	42	0	0 to	43	0	
Salt	1	5	0	2	0	0
Bones, Dust, per qr.	1	5	0	1	6	0
Do. ½-inch	1	4	0	1	5	0
Oil Vitriol, concentrated, per lb.	0	0	1	0	0	0
Do. Brown	0	0	0¼	0	0	0

OIL-CAKES.

Linseed-cakes, per ton—						
Thin American, in brls. or bags	£10	10	0	£11	0	0
Thick do. round	10	0	0	0	0	0

Marseilles	£10	0	0 to	£0	0	0
English	10	5	0	10	10	0
Rape-cakes, pr ton	6	5	0	6	10	0

JOHN KEEN, 35, Leadenhall-street,
(Late Odams, Pickford, and Keen.)

Williams & Co., 24, Mark Lane—Azotic £6 10 0

Manufactured by Hodgson & Simpson, Wakefield, and Matthews & Co., Driffield.

Ammonia-Phosphate and Nitro-Phosphate per ton £8 0 0
Superphosphate of Lime ,, 7 0 0

Agricultural Chemical Works, Stowmarket, Suffolk.

Prentice's Cereal Manure for Corn Crops per ton £8 10 0
Prentice's Turnip Manure ,, 7 0 0
Prentice's Superphosphate of Lime ,, 6 10 0

Lancashire Manure Company, Widnes, near Warrington.

J. Knight & Co.'s Nitrogenized Bone Manures per ton £8 15 0

Manure Works, Grovehill, Beverley.

Tigar & Co.'s Celebrated Turnip Manures per ton £7 10 0

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THE FARMER'S MAGAZINE.

AUGUST, 1857.

PLATE I.

A WELSH OX,

THE PROPERTY OF SIR R. B. WILLIAMS BULKELEY, BART., M.P., OF BARON HILL, BEAUMARIS, NORTH WALES.

The first prize of £20 was awarded to this ox at the Smithfield Club Cattle Show, December, 1856, as the best of the Welsh steers or oxen. The silver medal for the breeder went to Mr. Hugh Jones, of Bodferig, Aberffran, Anglesey. The beast was purchased by Mr. Smith, butcher, of King's-road, Chelsea.

This ox is considered by no means a perfect specimen of the breed, although unquestionably the best of the three shown in the class. The Anglesey, or rather North Wales breed of black cattle could be greatly improved either by a judicious crossing with the Scotch black breeds, or with greater care in the selection and rearing of the stock itself. The best heifers, however, are sold out of the country when yearlings, and are sent to Kent and Essex. Little trouble is taken in the selection of the native bulls. The young stock, also, is starved. There being such a quick demand for Welsh cattle, at very remunerative prices, for the grazing districts of Leicestershire or Northamptonshire, the farmers of North Wales put themselves at but little pains in attempts to improve their stock.

The Welsh runts are especial favourites of the butcher, from the good quality of their flesh. During the winter of 1855-'56 Sir R. B. W. Bulkeley sold between forty and fifty head of them in Smithfield Market at an average of £34 each.

PLATE II.

ELLINGTON; A THOROUGH-BRED ENTIRE COLT.

Ellington is a brown colt, standing fifteen two-and-a-half in height. He has strong quarters, drooping towards the tail, and a good back and loins, while the same term may be applied to his brisket, shoulders, arms, thighs, knees, and hocks. His neck is strong, and he has rather a coarse head, which is not improved by small lopped ears, and a dull eye. He carries his head straight, and is a horse of good bone, quiet temper, and whole in his colour, with the exception of one white coronet on his near hind foot. His feet are remarkably large. Ellerdale, his dam, went to the stud in 1851, and her first foal, Ellermire, by Chanticleer, proved herself, though light and undersized, a capital performer at all distances. Ellington, her second foal, dropped in 1853, is by the Flying Dutchman, and 'fifty-six was the first year that his three-year-old stock were ever stripped.

MANGOLD WURZEL.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

It is hardly possible to over-rate the importance of some of the recent endeavours to improve the growth of our root crops. I have seen this when amongst my Surrey neighbours; and I feel it now while I am writing this paper amid some of the farms of East Suffolk, whose holders need fear little, when their skilful management is compared with that of other (oftener *talked-of*) districts. There is here, as in other places, an increasing growth of mangold wurzel. It is used for stock earlier in the autumn than heretofore: it is found that by improved management more land can be got ready for this crop than was once deemed possible; and, these chief difficulties overcome, the superior merits of the mangold, not only for its storing and feeding properties, but for its freedom from the attacks of insects, are certain of obtaining for it the preference over some of the other widely-cultivated roots. The progress of discovery, too, seems to add considerably to our knowledge of the value of this root for manufacturing purposes. With us, however, its use as food for stock must ever be our primary consideration. This conviction, however, in no way militates against any plans for first employing the beet for such profitable purposes as shall leave its refuse matters but little if at all deteriorated in their nutritive properties. In this way many manufactures have been extensively and profitably established, not only on the continent, but to some extent in England—that of beet-root sugar, and that of beet-root spirits. It is true that the manufacture of sugar from beet has needed, on the continent, the protection of the Government-duty on cane sugar; and in England, when attempted some years since, it failed in its competition with the low prices of Muscovado sugar which then ruled; but still it was felt that with a higher market a different result might be obtained. The value of the refuse beet for stock, after the sugar had been extracted, was, however, well established; and this fact is of some importance, as supporting the reported results obtained by the beet-spirit distillers, to which I shall presently refer. On the continent the refuse pulp of the sugar manufactories is mixed with other substances when given to stock (and there is much yet to be learnt as to the most profitable *mixture* of food). We give an instance from the practice of an extensive French farm. In the farm of Bresle, in France (Oise), connected with a sugar-from-beet manufactory, in 1854, 7,000 sheep were fattened (*Quar. Jour. Ag.*, 1856, p. 334); in one sheep-fold 500 half-breds consumed daily 880 lbs. of the pulp of the beet-root, 440 of rape cake, 440 of poppy cake, 385 of chopped green forage, 385 of chopped straw, with 5 lbs. of salt, all mixed together. The sheep consumed at most about 1 lb. of rape cake, but they ate greedily 2 lbs. of poppy cake: a mixture of the two seems to answer well. When fed, they pick out—1st, the beet-root pulp; 2nd, the cake; 3rd, the cut forage and straw. The sheep cost from 18 to 23 francs, the ewes from 13 to 20 francs: their fleeces vary from 6½ to 12 lbs. The refuse pulp of the beet thus prepared will consist of the beet deprived of a large portion of its saccharine and other soluble matters, by being mixed with water. The object of the distiller is to convert the sugar of the beet into spirits, which is readily enough accomplished by fermentation. But as the sugar-maker reduces his beet to a pulp, whilst the distiller of spirits employs it in thin slices, the probability is that more of the other nutritious, yet soluble matters of the root, will be found in the distiller's refuse than in that of the sugar-maker.

An account of the distillation of beet-root, by Mr. R. S. Burn, will be found in the just-published number of the *Quarterly Journal of Agriculture*, (p. 49); and he there dwells, in a valuable paper, at some length upon the real feeding value of the refuse beet of the distiller. It seems that the slices of beet-root after distillation, or *cossets*, as they are termed on the continent, contain a large per-centage of the nutriment contained in the root in its normal condition, and have moreover the invaluable property of keeping for one or two years in a state of perfect preservation, either banked up like potatoes, or kept in reservoirs or pits. "The fermentation," says M. Leplay, "of the slices of saccharine roots, in a juice saturated with its own elements, has the effect of leaving to the root its azotic nutritive and other valuable principles, and changing into alcohol the saccharine matter only. The nutritive azotic matters, being essentially fixed by the process of fermentation and heat, are found solidified and coagulated in the slices during the fermentation and distillation, and are thus insoluble in water. When the distillation of the fermented slices has been conducted so that they retain their shape after the operation, they drain off

[illegible]

[illegible]

[illegible]

and concentrate themselves into a volume of 50 per cent. less in bulk, retaining all the nutritive principles they contained before their fermentation: thus drained, they form a compact mass, of the consistency of cheese." The result of the analysis of this pulp and of the fresh mangold wurzel, by Mr. J. Mitchell, it will be useful to place in juxtaposition:

	Fresh root.	Fresh pulp.
Water	86.470	87.502
Sugar	8.028	2.065
Pectine and mucilaginous matter	1.904	3.032
Albuminous matter and woody fibre	2.824	5.642
Fatty matter	traces.	traces.
Ammoniacal salts	traces.	1.754
Alkaline and earthy salts	774	

After keeping some of the distillers' pulp for three months, it was found to contain—

Water	85.603
Sugar	2.038
Pectine and mucilaginous matter	3.302
Albuminous matter and woody fibre	7.100
Fatty matter	traces.
Ammoniacal, alkaline, and earthy salts	1.957

Mr. Burn adds the result of feeding from February 16th to March 9th, 1857. Some ewes with their lambs on the fresh mangold root, and on the distiller's pulp six ewes, three with two lambs and three with one lamb, had daily—

Distillers' residue	22⅛ lbs.
Cake	3 lbs.
Chaff	30 lbs.

	cwt.	qrs.	lbs.
They weighed when put up	8	3	8
At the end of first week	9	3	0
„ second week	10	0	11
„ third week	10	2	10

Six ewes, three with two lambs each, and three with one lamb each, had daily—

Mangold wurzel	15 lbs.
Chaff	30 lbs.
Cake	3 lbs.

	cwt.	qrs.	lbs.
They weighed when put up	8	3	21
At the end of first week	8	2	26

The mangold was then increased to 28 lbs.

At the end of second week	8	3	20
„ third week	7	2	23

The commercial prospects of the proposed beet-root distillation did not escape the attention of Mr. Burn. He says, on the authority of M. Gay Lussac, that a ton of white Silesian beet will yield, on the average, five per cent. of pure alcohol, at 100 degrees of strength. Proof, in England, is only 56 degrees: therefore, 1 ton of beet produces 19¾ gallons of English proof spirit, at 56 degrees. An acre of ordinary land should yield 25 tons of white Silesian beet-root, and therefore will produce 493 gallons of proof spirits; whereas, the best acre of barley ever grown will produce only 170 gallons of proof. Calculating the price of the spirit (without excise duties) at 3s. per gallon, the result is £73 19s. per acre of beet.

The spirit thus produced appears to rank next in value after grape spirit. It is fitted, Mr. Burn adds, for any use to which pure spirit of wine can be applied. It is used for many purposes where a grain spirit is not in favour, such as perfumery, &c. Many thousand gallons of beet-root spirits, paying duty of 15s. per gallon as foreign spirits, are imported from Belgium annually, for the use of perfumers and aromatic spirit makers. The spirit is also, in the South of France, employed in the fabrication of brandy. It is also used extensively in the arts, for all kinds of chemicals, varnishes, &c.

It may be true that these distilleries can only be carried to a certain extent, and that they cannot be, therefore, of universal application; but still, I am inclined to believe that much may be done in this way, in particular districts, to aid the farmer to contend successfully against low prices and bad seasons. It may also be correct that the present—however improved—distillatory process is yet very imperfect; but then, as concludes Mr. Burn (referring especially to the very improved apparatus invented by M. Leplay, and introduced into this country by Messrs. W. Dray and Co.), let us not forget, while criticising the crudities of new processes, the difficulties which beset all inventors; that their inventions do not, Minerva-like, spring from their brain ready armed. As the births, says our great Bacon (and the sentence is one pregnant with meaning), of living creatures at first are ill-shapen, so are all innovations, which are the birth of Time.

I had intended to have said something on the manures best adapted to the growth of mangold-wurzel; but this will be better, perhaps, reserved until the time of beet-sowing approaches, early in 1858. There are two papers on this head in the last number of the *Journal of the Royal Agricultural Society*, to which, in the meantime, my readers will beneficially refer. Of the produce per acre of mangold-wurzel, a Nottinghamshire grower (p. 403) says: "I can reckon upon 30 tons of beet per acre, quite as securely as upon 20 of swedes. Upon good turnip land, where there is a large proportion of clay in the soil, the comparison is still more favourable to the beet. Then, again, the nutritive quality of the beet is, after Christmas, fully equal to that of the swede: after March, it is superior." Then, again, I am much inclined to agree with Mr. Caird, when he observes (*ib.*, p. 400): "There is probably no root crop grown by the English farmer which is more under the influence of manure than mangold. To no other green crop can a heavy dose be so safely applied; and the only question with the grower is, to ascertain the kind of manure which, at the least cost, will produce the greatest effect." And he continues: "Not knowing exactly what might be the most suitable dressing for this crop, I last spring adopted the safe method of applying a mixture of all the best manures, in the following liberal proportions—viz.:

15 cubic yards of good dung
2 cwt. of Peruvian guano
2 cwt. of superphosphate
2 cwt. of nitro-phosphate
4 cwt. of common salt

to each acre of my general crop, on a good loam, in Kent, within ten miles of London; and the result has been very satisfactory. The produce of one measured acre—probably the best in the field —weighed upwards of 40 tons of roots (the yellow globe variety); and the whole field has averaged over 30 tons."

These and other details with regard to the dressings for mangold-wurzel I will again refer to, at a season when such remarks may be more useful to the farmer; and I may before that time have occasion to offer a few remarks upon the novel notions which, I find, are entertained by some Suffolk farmers as to the feeding properties of roots and grasses, dressed with certain artificial manures. Our time can hardly be more profitably employed than in this kind of practical researches. They apply to a branch of my readers' arduous profession which, I feel, is likely to become more and more an object of his attention, since it relates to the increased production of animal food—of all the returns of our farms, the most likely to be steadily remunerative, since it is the least subject to the uncertain prices induced by the competition of the farmers of more cheaply cultivated foreign countries.

THE ACTION OF THE ATMOSPHERE ON THE SOIL.

The earth we cultivate is not composed of inert passive materials, that merely submit to the mechanical and chemical action of varying temperatures, rains, winds, and gases, but is ever vigorously exercising certain powers of its own, among which is its absorptive property. This we find treated of in the third division of Mr. Jamieson's prize essay "On the Action of the Atmosphere upon newly-deepened Soil." As regards the absorption of gaseous substances, the quantity taken up will depend in a great measure upon the amount of surface with which the body to be absorbed can come in contact. Old Jethro Tull could only theorize upon the advantages of providing by tillage an "internal superficies"; saying that "one cubic foot of earth may contain many thousand square feet of surface." Our author here, however, is enabled to illustrate his propositions by the facts of modern science. Thus "Mitscherlich calculates that a volume of one cubic inch filled with globules not exceeding one ten-millionth of an inch in diameter, but arranged so that lines passing through their centres are mutually perpendicular or parallel, will present a surface of 218,166 square feet; and he considers that the substance called plantinum black may possibly offer a surface of this extent. The cells of charred wood are, on an average, one-2400th of an inch in diameter, according to the same high authority; and its surface for a cube inch would therefore, by calculation, be equal to 100 square feet, supposing the charcoal itself to occupy no space. He however found, by immersing a piece of charcoal in water, that only five-eighths of its entire volume are left available for the entrance of gases, which would give a surface of 73 square feet." Saussure found that charcoal absorbed thirty-five times its volume of carbonic acid at 53·6 deg. Fahr., and at a pressure of 26·895; and ammoniacal gas is condensed within its pores in a far greater degree.

"All porous bodies which offer a considerable surface to gases act like charcoal. The humus of the soil, and decayed wood, approach very nearly to charcoal in this property; decayed oak-wood, according to Liebig, absorbing seventy-two times its volume of ammoniacal gas, after having been completely dried in the air-pump .... The property which some bodies, such as silica, possess of condensing the humidity of the air, may authorize us," says Mitscherlich, "to conclude that they are adapted for condensing gases.... It will be seen, therefore, how important a matter, even in this respect alone, it is to work the soil when it is in a suitable state for crumbling down and pulverizing under the action of the plough or other implement used, and not turn it over in a wet, clammy condition, when it sticks together or glazes over in continuous solid lumps. The disintegrating effect of the frost upon it will be also appreciated."

Moisture, oxygen, ammonia, and other gases are sucked in more voraciously by humus than by any other ingredient of the soil; clay, oxide of iron, and magnesia are also great absorbers, but very much depends upon their state of mechanical division. At this point of the essay we meet with one of the few observations particularly relating to "newly-exposed" soil; and this is only the expression of an opinion held by everybody, instead of being a deduction from sufficient data. He says: "With regard to the comparative extent to which this power may reside in old and newly-raised soils, I think there can be little doubt that long-cultivated dry soil—highly charged as it generally is with humus, and having its particles continually pulverized by the operations of tillage and the roots of plants—will greatly exceed in this respect raw newly-raised soils which have long lain in a dead compact state beneath the furrow. The ferruginous earths that frequently abound in some subsoils will, however, on exposure to the atmosphere, take up ammonia to a considerable degree after they have crumbled down under the influence of frost, rains, and drought."

And a little further on we meet with this inference—"If, therefore, the earth contains much humus, alumina or clay, oxide of iron, or magnesia, in a state of fine division, its power of absorbing gaseous matters from the air will probably be good."

The latter part of the essay consists of an examination of the nature and constitution of the various oxides and earthy salts of which the soil is composed, the geological and mineralogical features of this country being first touched upon, and then the simple minerals—such as quartz or silica, felspar, mica, hornblende, limestone, &c., from which the endless varieties of strata are for the most part ultimately derived—are taken up in succession, and the way in which it is affected by atmospheric influences shown. We glean the following items of information from complete disquisitions on the analysis, history, and qualities of each substance: "Although in its pure crystalline state silica is one of the most refractory substances, it is yet in some of its combinations clearly subject to the solvent effects of the atmosphere and rains, as it is found in the stems of our grain crops, and must therefore enter their rootlets in a liquid form. It is well known as a solution in some thermal springs."…. "Silica exists in the soil in several forms and combinations; under some of these it is little affected by the atmospheric influences, but under others it is susceptible of a gradual dissolution—slow, it is true, but still perhaps sufficient in many cases for the wants of the cultivated plants."…. "Felspar is frequently one of the most rapidly decomposing minerals, the atmospheric modifications of the soil being often due, in a great measure, to its changes." "Although the decay of felspar is generally referred to the carbonic acid of the atmosphere and the solvent power of water containing that agent, it appears not improbable that the ammonia and nitric acid of the air may also have a share in producing this effect." The felspar falls down into a powder, forming a clay; and the fertility will depend upon the amount of alkalies which have escaped bieng dissolved out. The action of the atmosphere upon mica is apparently similar to what takes place in felspar, the ultimate result being a clay, the potash or magnesia dissolving out. "The hornblende minerals are amongst the most abundant ingredients of our rocks. They are very liable to be acted upon by atmospheric influences, chiefly through the oxidation of the protoxide of iron, which they so abundantly contain….. These igneous rocks, decomposing under atmospheric influences, form soils generally noted for their fertility….. Dr. Fownes found that phosphoric acid is a very usual component part of volcanic rocks, and is a principal source of the remarkable fertility possessed by soils derived from their disintegration." "The principal effect of the atmosphere on calcareous matter is to dissolve it through the action of the rain-water containing carbonic acid." "Hardly any soil or rock exists, perhaps none, of which iron does not enter to some extent into the composition….. Disseminated as it is so abundantly and so generally through mineral and earthy matters in the forms of its oxides and salts, it becomes a fruitful source of change and disintegration in their composition. This arises from its strong affinity for oxygen:…. the salts of the protoxide of iron have so strong an affinity for oxygen that, on being freely exposed to the air, they greedily absorb that element and pass into the peroxide."

Now, as a conclusion to the essay, we had expected a summary of the principal changes which occur in soils of different kinds when newly deepened and brought into intimate contact with the atmosphere. We hoped that a sort of balance would be struck between the acquisitions and losses to the soil from absorption, and volatilization, and new advice for summer and winter tillage be thus deduced. The above enumeration of the properties and changes of the various ingredients is unsatisfactory; for though these changes may be proved to occur when each body is acted upon separately—what is the combined and resultant process going on when all the varieties of chemical agents and active ingredients are mingled together, and one action may possibly accelerate, neutralize, alter, reverse, or in some way interfere with twenty more? Just as homœopaths tell us that a medicine compounded of a number of drugs, each of which is known to operate in a certain manner when administered alone, will not have the intended result of effecting all the changes due to those remedies.

The only generalized result which our author gives us is, what everybody knew already, that "the influence which the atmospheric forces exert upon the soil is very various and extensive. Their action, indeed, is not rapid nor energetic, and a very perfect exposure of the soil is necessary to catch much of the ameliorating influence. It is not therefore to be expected that a barren soil can be rendered fertile by mere exposure to the air, although it were wrought with a perfection that would have satisfied even Jethro Tull. The importance, however, of taking advantage of the manifold benefits to be derived from the air, it is hoped, has been rendered evident in the course of this paper." And then, with a hint as to the advantages of drainage, he recommends ploughing land into ridges like potato-drills for winter exposure. "Many other benefits, however, than those of the frost will result. Are the oxygen—ammonia—carbonic acid—nothing? Let the agricultural mind therefore be of good cheer; the atmosphere is a force everywhere present; although his farm may be like Justice Shallow's—'barren, barren'—he has at least this consolation—'Marry, *good air!*'"

THE SMALL FARMER, AND THE NEW FIELD FOR HIS LABOURS.

It was not only the agricultural labourers who went to the wall during the advance of prices which took place at the close of the last century: the small working farmer succumbed likewise. Many were the small cultivators, and even small yeoman-farmers, who, during those days of inflated agricultural prosperity for which farmers afterwards suffered, were reduced to the state of day-labourers, and even became, like all rural labourers of that period, recipients of parochial relief. There is little room for doubt that in the present state of agricultural progress the small farmers of these days, where they exist, will succumb to the larger. We may regret it; but so it has been, and so it will be. The inevitable agricultural tendency of the present day is to the consolidation of farms. It is all very well to talk of the small cultivators of Belgium; they farm on a different system to the small cultivators of Britain, and it is as impossible to indoctrinate the latter with the habits of the former, as it would be to teach them to dance in the French style, or to relish French cookery. The experiment was tried in Ireland of endeavouring to retain the small occupations of land after the failure of the potato, which formed their basis. The experiment proved, however, an utter failure, and the Irish peasantry struck out for themselves the only remedy in a self-supporting emigration. They transported themselves without capital to a country where land is cheap and labour dear, and where rough-farming, in which the farmer does the greater portion of the labour with his own hands and those of his family, succeeds better than higher and more refined farming carried on with hired and high-priced labour. It is true that with all their passion for land in their own country, the Irish emigrants to America have met more remunerative employment than the cultivation of the soil. It is satisfactory, however, to know that to the small working farmer, possessed of a certain amount of capital and with a family capable of assisting him in the work of the farm, our North American colonies hold out the prospect of land of the best quality, which may be purchased for a sum which would not do more than pay one year's rent of inferior land in England, and where the more numerous his family the better. It is not necessary that a farmer of this description should plunge into the back-woods. If he is in possession of a moderate amount of capital, he will find plenty of partially-cleared farms, with log-houses, which the owners will be ready to sell, while they themselves plunge deeper into the forest. This passion for removing appears to be one which, when a man has made up his mind to emigrate, he finds it difficult to shake off.

By recent advices from Canada West, it appears that many of the immigrants, of late, have been from the class of small farmers of this country bringing out a capital, which, however inadequate for high-farming here, is quite sufficient for the system of husbandry pursued in a new country, where it answers better than farming of a higher order; whilst in this country it is the least successful and the least able to compete with the high farming of men possessing more abundant resources. It appears, by advices from Canada, that among the recent arrivals, there are a considerable number of small farmers from England and Scotland. To those labourers, too, who can raise the necessary funds for their conveyance to Canada, that country holds out the fairest prospect—high-priced labour, low-priced food, and abundance of employment for themselves and their families. For female domestic servants, too, it appears that there is a great demand. There is equal demand in the Australian colonies for rough labour of any kind, and, on the whole, that country holds out better prospects to the labouring classes than the gold-fields of Australia. To the inexperienced, however, who know little of the hardships of the diggings and their precarious prospects, the diggings are more attractive. There are, moreover, free passages to Australia for labourers, and none to Canada. For small farmers, who wish to settle down at once as cultivating proprietors, and who wish in emigrating not to sever their connexion with the mother-country, Canada West appears to be the spot. There they will have a country, the aspect of which approaches more that of the old country than Australia does; and a country which, in the rapid strides it is making, quite equals, if it does not surpass, the United States. The Scottish peasantry are emigrating thither so fast, that the farmers are beginning to be apprehensive of a dearth of labour at home. We regard the apprehension of such a dearth in any part of the United Kingdom as futile, aided as we are by the continually increasing appliances of machinery to agricultural operations. As a social question, we rejoice to see the peasantry of this country abandoning visionary agrarian schemes for the prospects of independence which the colonies afford. The waste-lands of the colonies are the birth-right of the British peasantry, and they are their best friends who teach them to regard them in that light. The more, too, the colonies are peopled, the greater becomes our means of maintaining an increased population at home. They are far better times for this country, and always have been, when two masters are looking after one man, than those times, which most of us can remember, at the close of the wars of the French revolution, when the bubble of the agricultural prosperity burst, and two men were running after one master. Those were the days when poor Lord Liverpool was in constant trouble between agricultural and manufacturing distress, "Swing riots, and blanketeers, over-production and over-population, too much food and too many mouths to eat it!

IRISH AGRICULTURAL STATISTICS.

We have before us a report from the Irish Register-General, elaborately compiled and most minute, giving tables showing the estimated average produce for 1856, also the diversity of weights used in buying and selling corn, potatoes, and flax, in Ireland, and the emigration from Irish ports for one year, ending 31st December last.

The estimated total produce of the principal crops, with the average produce per statute acre for the past three years, will be interesting to our readers. They are as follows:—

Description of crops, with average per acre, as calculated by stones or tons.	1854.		1855.		1856.	
	Quantity produced.	Average.	Quantity produced.	Average.	Quantity produced.	Average.
	Quarters.	Per statute acre.	Quarters.	Per statute acre.	Quarters.	Per statute acre.
Wheat in barrels of 20 stones.	1,452,467	5·9	1,520,819	5·7	1,629,963	5·2
Oats do. 14 do.	11,293,101	8·8	10,266,350	7·8	9,236,869	7·3
Barley do. 16 do.	1,212,047	9·3	1,097,631	8·7	757,536	7·5
Bere do. 16 do.	89,066	8·1	56,848	7·8	32,773	7·7
Rye do. 20 do.	55,687	7·9	57,362	8·0	44,520	5·4
	Tons.		Tons.		Tons.	
Potatoes do. 20 do.	5,061,654	40·9	6,235,281	50·8	4,408,543	31·9
Turnips in tons	5,207,636	15·8	6,073,598	16·6	4,581,172	12·9
Mangel wurzel, do.	366,427	17·2	402,958	18·0	287,838	13·0
Cabbage, do.	356,649	13.3	312,928	13·0	332,650	11·9
Flax in stones of 14 lbs......	35,606	37·6	23,428	38·6	18,791	28·3
Hay in tons	2,494,951	1·9	2,662,046	2·0	2,492,732	1·9

It will be seen that in 1856, although the yield per acre was less, the total produce of the wheat crop was greater by 109,144 quarters than in 1855, on account of the increased breadth under that crop, amounting to 82,275 acres. Oats decreased 1,029,481 quarters, caused by a diminution of 81,421 acres in the extent sown, and of half a barrel an acre in the average yield of Ireland, compared with 1855. Barley and bere also show a lower amount of produce in 1856, a smaller area having been cultivated, and the yield per acre being under that of the previous year. Rye, with a greater breadth, gives a smaller total produce in 1856 than in 1855. Potatoes, with an increased area of 122,403 acres, exhibit a decrease in the total produce of 1856, compared with 1855, in consequence of the yield per acre being less. In the total yield turnips also show a decrease of 1,492,426 tons, owing not only to the estimated produce being less, but also to the breadth sown being smaller than in 1855. Mangel wurzel, flax, and hay also show a decreased produce per acre when compared with 1855.

Connected with the prosperity of a country the increase of its population is a most important matter of consideration. Yet in Ireland, although we daily read of the vast improvement of the country in the past few years, it reads strangely when compared with the figures given in the tables before us. We arrive, however, at these facts, that emigration is still going on at a rate, that, notwithstanding the annual births, is likely to have a very sensible effect upon the labour market of that country. In 1856 Ireland commenced the year with a population of 6,077,283, which, although increased by an excess of of 60,990 births over the number of deaths, yet was reduced, at the end of the year, by 90,781 persons having left the country, to 6,047,492. And we further find this tide of emigration still leaving its shores; as, in the first four months of the present year, 33,052 persons emigrated, against 26,666 who left in the same months of 1856, or 6,386 more this year than last. Tipperary contributed the largest proportion of emigrants, 19·35 per cent. having stated themselves to have come from that county. Since 1851 the following persons have emigrated, viz.:—

From Munster	331,036
Ulster	206,973
Leinster	184,481
Connaught..................	105,661
Counties not known..........	10,629
Total	838,780

—or nearly 13 per cent. of the population of 1851.

Another remarkable fact, but one to be regretted on more accounts than one, is, that over 68 per cent. of the emigrants in 1856 were between the ages 15 and 35 years; only 13 per cent. were 35 years old and upwards; thus showing that the majority of those who left Ireland last year was from among the young and vigorous portion of its inhabitants.

The other portion of the report refers to the varieties of weights used in buying and selling the produce of the country.

It appears that *wheat* is sold in some counties by the barrel of 20 stones, and in others by the cwt. of 112 lbs., and the stone of 14 lbs.; *oats* by the barrel of 12 stones, 14, 24, and 33 stones—and also by the cwt. of 112 lbs.—and stone of 14 lbs.; *barley* by the barrel of 16 stones and 24 stones—the cwt. of 112 lbs.—and the stone of 14 lbs.; *flax* by the cwt. of 120 lbs.—and the stone of 16 lbs., 16¼ lbs., and 24½ lbs.; and *potatoes* by the barrel of 15 stones, 20, 21, 24, 32, 40, 48, 64, 72, 80, 95, and 96 stones—by the cwt. of 112 lbs.—and by the stone of 14 lbs., 15, 16, 21, and 23 lbs.: even in towns in the same county different weights are employed. Thus, it appears, that a farmer in the county of Roscommon might state he had eight barrels of potatoes to the acres, and one in the county of Dublin that he had thirty-two barrels, the produce of the acre being the same in each case, viz., 640 stones,

THE ORDNANCE SURVEY—A CADASTRAL MAP.

A correspondence is going on in the daily papers between Lord Elcho on the one hand, and Sir Roderick Murchison and Mr. Locke on the other, respecting the second vote of the House of Commons, by which the twenty-five inch mapping of the Scottish Ordnance survey on a scale of twenty-five inches to the mile has been abandoned. Our opinion respecting the natural advantages of an accurate territorial as well as geographical survey are on record; and we cannot but regret the abandonment of the large scale on the Scottish survey, which we hoped some day to see extended to England as a substitute for that very imperfect one—the tithe survey. The imperfections of that survey arise from its having been executed by the individual parishes and proprietors, instead of under some central authority. The result is that scarcely one-third of tithe maps are fitted for the purposes of valuation or registration; as they might have been at even less expense to the proprietors if conducted by the Government on one uniform plan, but paid for by the landowners.

While regretting the abandonment of the survey of Scotland on the large scale, we are quite willing to admit that this is one of those questions on which there is a great deal to be said on both sides, and which is fair subject for a compromise. The compromise which we would recommend is this—that the survey should proceed in as great detail as would be required for a map on the twenty-five inch scale; that no map but that on the one-inch scale should be published, but that the extra expense required for the surveying and mapping on the twenty-five inch scale should be defrayed by an assession on the land. In return for this special tax imposed on the land, each landowner should be furnished with a certain number of copies of his property, prepared by the lithographic or anastatic process. The following points may be accepted as indisputable:—1. That the one-inch scale is the best adapted for geographical purposes. 2. That the six-inch scale is too large for geographical, and too small for territorial and property purposes. It originated in Ireland at a time when the county cess was the only tax on the land, which was levied, not on individual farms and fields, but on townlands, as the unit of taxation. A townland, it may be as well to remind our English readers, varies in size from less than one hundred to more than three hundred acres. As soon as the poor-law was introduced into Ireland, a more minute survey became necessary, which should embrace every field. Why, in England and Scotland, should we adopt a scale which is too small for measuring the contents of fields, on which the writing cannot be read without a magnifying glass? 3. Another undoubted fact is that the expenditure for the ordnance survey, and, we may add, geological survey, may be regarded as a mere advance of money, to be ultimately repaid by the sale of the maps. The Government geological survey has hitherto been conducted with the one-inch maps, because in the districts over which it has extended there were no others. As soon, however, as it proceeded into counties mapped on a larger scale, the six-inch scale was found superior to the one-inch, and the twenty-five-inch superior to both, although the only geological maps which will ever be published are reduced to the one-inch scale. By the anastatic process, therefore, that survey might be furnished with copies of the twenty-five-inch scale for their working plans, while they would only publish the results on the one-inch scale. In former articles, we stated the annual amount derived by the Government from the sale of the Ordnance and geological maps, and we have reason to believe that since then the sale of both has considerably increased. But while we give all due credit to the geological maps of the Government as maps of classification, it cannot be pretended that they include all the information that a landowner should possess respecting the soils, subsoils, and substrata of his estate; or that such information can be recorded in an efficient and satisfactory manner on a map on a smaller scale than that of the tithe survey, or, better still, the more perfect maps of the Ordnance Office.

The time has not yet arrived when landowners are aware of the advantages they would derive from such a minute examination of the soils, subsoils, and substrata of their estates; but it will arrive before another generation has passed away, and there will be plenty of demand for the Ordnance maps on the largest scale from every proprietor of an estate.

Mr. Locke, in his letter, talks of imaginary lines on the Ordnance maps. The weak point of the survey is that these lines of equal altitudes are not, and cannot, be defined on the ground by permanent marks. Far superior to these would be the method advocated by Colonel Dawson, in his evidence before the House of Commons, to which we have already adverted. He proposed that instead of these lines of equal elevation, of which no permanent trace can be left on the ground, the elevation of certain fixed points should be determined and recorded on the ground, from which a landowner who desired it, or the engineer constructing a road or railway, or requiring to ascertain levels for draining and other agricultural purposes, would be able to construct contour maps for their own special purposes. Colonel Dawson proposed that level-marks should be made on permanent objects easily determined and easily found, both along the lines of drainage and of the lines of watershed. He would have such altitudes recorded, for instance, on the mile-stones, sills of church-doors, &c. These would serve as fixed points, to which those who required more detailed levellings might refer for that datam line.

There is one important point connected with a cadastral survey to which we have not referred, viz., the necessity of it for the purpose of registering titles and simplifying the conveyance of land. It is well known that no small portion of the bulk of a title-deed is made up of verbal descriptions of the boundary of the property to which the deed refers. All this might be avoided by reference to an authenticated copy of a cadastral map or map of public record. The question then remains, whether it is the duty of the State to construct such a map at the public expense for the benefit of a particular class; that difficulty, however, is obviated by means of the compromise we propose, under which the landed property should pay the difference of expense between the construction of a mere geographical map on the scale of one inch to the mile and the cost of constructing a cadastral map on the large scale—not to be published, but to remain of record, and of which every proprietor should be furnished with a certain number of copies.

The Scots are a shrewd, sensible, calculating people. Many things succeed under Scottish management which are lamentable failures in England—the joint-stock Banking system for one. Let them consider well the compromise we have proposed. If they do not consider a cadastral map worth the difference between the construction of such a map and the construction of a mere geographical map, we should then say that the recent vote of the House of Commons is perfectly right—and that the map on the large scale is unnecessary, a waste of money, a job, or whatever harsh name its opponents choose to call it.

THE ADVANTAGES OF DEEP CULTIVATION.

There is no doubt whatever that the English farmer is thoroughly awakened to the importance of deeper and more perfect tillage. While anxious after new sources of portable manure, grateful for the boon of the steam-thrasher, and patiently waiting for improvements in reaping-machines, he is more than ever alive to the advantage of being able to multiply mechanically the producing power of his fields. This beautiful island of ours cannot be stretched to a broader area; neither can we construct estates two stories deep, one gallery of ground upheld above another, like John Martin's Babylon gardens; yet every day is creating new demands for increased yields of agricultural produce. Thanks to the implement makers, we are continually receiving fresh tools and machines to render tillage easier, and to assist us in adding to the four or six inches of immemorial staple an equal thickness of good soil lying immediately underneath it, thus following the urban custom of gaining room vertically when it is denied to us in ground-superficies. The spread of surface-cleansing by paring and grubbing, mainly brought about by a supply of cheap, efficient, and economically-working implements, is really wonderful; and with its extension has also widened the view of the farmer, as to the far greater amount of autumn-cleaning which would be worth doing had he but motive-power enough for its performance. And there is no question that the approval and practice of deep tillage is also gaining ground. Intelligent agriculturists have not worked their teams in Herculean ploughing of fifteen-inch furrows and crumbling stiff-clay subsoils, without spreading the fame of their results; practice has not toiled or science preached in vain; and at the present time we believe the most valued boon to the farmer would be the placing in his hands a power that could make trench-work and deep-stirring easy, instead of costly and somewhat dreaded operations. Prizes for ploughs to work twelve inches deep are no longer deemed preposterous; and as we come nearer and nearer to the successful hauling of draught implements by the steam-engine, the production and testing of the best heavy-land plough becomes a closer struggle between manufacturers, and a livelier subject of attention to the business farmer. In the columns of agricultural journals and periodicals we have continual exhortations to increase our teams, strengthen our whippletrees, and dip the share deeper; and the National Society's Journal gives us essays on the best methods of deepening the staple soil, and on the effects of the atmosphere upon the newly upturned earth. The Marquis of Tweeddale devises a most effective subsoil-plough, and Mr. Stevens makes known to the world the extraordinary benefits on a large scale which have followed its laborious employment. Various inventors are favouring us with new subsoilers, and Cotgreave's trench-plough seems to have come opportunely for the application of steam-power to deep tillage.

There is no occupier who would not like to have his land in as fine tilth and as clean as a garden, deeply worked, pulverized, and enriched; only (as he will tell you) he must raise and be able to market green-grocers' and fruiterers' produce in order to make such perfect cultivation pay. As long as corn and roots and fodder are worth no more per acre than at present, there is a limit to the amount of tillage it will answer to bestow in growing them. Give him a power cheaper, stronger than that of horses, and still more than that of workmen; a power that eats only when at work, never wearies, and will accomplish the tillage wholesale at the right time, instead of being obliged to plod on bit after bit, often in unsuitable weather, and he will soon show what an augmentation of produce, and how many other advantages, follow a better style of culture.

Even in the virgin soils of America, this need for deeper and better husbandry is already felt. In a New York paper we read, "The great error of Indian-corn culture in the west is shallow ploughing; to which we may add, continuing the crop upon the same land for a long term of years without rotation. There are tens of thousands of acres of corn land in the west that have never been ploughed more than four inches deep, and the product is not over thirty bushels to the acre. The twelve inches beneath the four that have been disturbed is quite as good soil as the upper stratum, and only needs loosening to yield up its plant-food. On many of these acres, ten, fifteen, and twenty bushels may be added to the yield per acre by deep ploughing alone. It will cost but a little more to do this; and the increased yield is nearly all profit to the farmer. Deep ploughing would not answer tn thin soils unless accompanied with high manuring; but every cultivator may safely go down an inch or two deeper than usual, and if his soil be prairie or bottomland he may as well plough four or six inches deeper as two." The cost of cultivation, and the product of Indian corn per acre, varies much in the several states. The average of the whole country, according to the last census statistics, was only about 25 bushels per acre; and for the western corn-growing states not far from 27 bushels per acre: the highest average, 40 bushels to the acre, was in Connecticut, a state in no wise remarkable for the fertility of its soil. According to statements in the Patent-Office Report, some crops of this grain reached 130 bushels per acre. Of 35 acres offered in Massachusetts for premium, the average yield was 93 bushels per acre—the largest crop was 138½ bushels. These are certainly good yields to bring from the sterile bosom of New England soil; but they are far inferior to what might be raised upon the prairies and "bottom-land" of the West, with the same skill in cultivation. These results are mainly owing to deep ploughing and thorough mechanical preparation of the soil, manuring, and after-treatment.

In addition, then, to our home experience, we have here a voice from across the Atlantic testifying to the economy and advantage of deeper-working among the mineral riches constituting the soil. Let us hope that with these considerations before us, the exertions of inventors in the improvement of field-implements and the accomplishment of steam-tillage will meet with the encouragement they well deserve.

HIGHLAND AND AGRICULTURAL SOCIETY.

JULY 8.—The following report by the Council on Agricultural Education was read by Mr. Hall Maxwell.

"The Council consider that, in organizing the proposed system of education, there are two leading points to be attended to: 1st, The offer of every proper encouragement and facility to induce and enable agricultural students to become candidates for the society's diploma; 2ndly, The enforcement of stringent precautions to guard against the possibility of the powers created by the charter being abused, or the diploma being conferred on insufficient grounds. The committee conceive that a well-defined curriculum will serve as a guide to the young agriculturist, both as regards the subjects of study and the order in which they are to be pursued; and that its observance will afford the best guarantee for an education worthy of the diploma. This education must be of a twofold character, scientific and practical—the one to be acquired in the class, the other on the farm; and the sufficiency of both should be tested—1st, by evidence of attendance for prescribed periods in the class and on the farm; 2ndly, by a rigid and searching examination after the required attendance has been completed. In addition to a perfect knowledge ot the principles of husbandry, and of the details of practical farming, a candidate should be conversant with those departments of the following branches of study which bear upon agriculture:—1. Chemistry, scientific and applied; 2. Natural history, including the principles of zoology and geology; 3. Botany; 4. Veterinary medicine and surgery; 5. Technology, or industrial science in its bearings on agriculture; 6. Field engineering and surveying; 7. Mechanics and architecture, in so far as regards a knowledge of their use and application to the operations and buildings of the farm; 8. Book-keeping and accounts. While candidates are not tied down to any particular college or seminary, they should be required to exhibit certificates of attendance for prescribed periods at the following classes in some educational institution, approved of and recognized by the examiners as sufficient:—Agriculture, chemistry, natural history, botany, and veterinary medicine and surgery. Acquirements in technology, field engineering and surveying, farm mechanics and architecture, and book-keeping, may be established by examination, without certificate of attendance, but students should nevertheless take advantage of whatever classes may be available for these branches. Students should not be restricted in their attendance to any particular part of the country or style of farming; but power should be reserved for the examinators to judge of the sufficiency of the certificate produced, and of the competency of the party granting it. The whole course of study should embrace not less than four years—two at classes and two at the farm; and students should be strongly recommended to pass throngh the scientific departments first, so as to enter on the practical part with the advantages and the aids derivable from a proper education. When the scientific course is preferred in point of time, a student may be examined upon it before going to the farm. A student may take alternate years of the classes and of the farm, but it should not be permissable to devote to either less than an entire year at a time. No part of the course should commence until the student is 17 years of age, and consequently a diploma cannot be granted until he is 21. The following appears to be a suitable arrangement for the scientific course: 1st year, summer, natural history three months, botany three months; winter, agriculture six months, chemistry six months, veterinary surgery six months. 2nd year, summer, natural history three months, analytical chemistry three months; winter, agriculture six months, technology six months, agricultural engineering, architecture, and surveying six months. This arrangement is merely suggested as providing a proper course of study and succession of subjects, but the student need not be prohibited from adopting another order provided he proves attendance, for the prescribed periods at the specified classes. By adopting the arrangement indicated, he gains the convenience of being taken upon examination immediately at the close of his course or the termination of a winter session; and he has the advantage of carrying to the agricultural class the knowledge of botany and natural history acquired in the first summer. It is recommended that two winters should be devoted to the agricultural class. The course has hitherto been limited to one, but the committee entertain a decided opinion that it might be beneficially extended; and as Professor John Wilson has expressed his concurrence and readiness to co-operate, no difficulty is anticipated in effecting this. As a strict adherence at the outset to these or any other regulations which may be enacted would probably have the effect of excluding candidates for two years from their promulgation, power should be given to the council during that period to grant the diploma to parties who should be found possessed of qualifications and acquirements of a high order, and whose education has been undoubtedly worthy of the honour sought for. The Council have further in the discharge of their duty, to report the nomination of the following Board of Examiners: science and practice of agriculture, mechanics, and architecture of the farm, Professor John Wilson, John Finnie (Swanston), Robert Russell (Kilwhiss), John Wilson (Edington Mains); botany, Professor Balfour; chemistry, Professor Thomas Anderson; natural history, Professor Allman; technology, Professor George Wilson; veterinary surgery, Professor Dick; field engineering and surveying, John Miller, of Leithen, C. E.; bookkeeping and accounts, Kenneth Mackenzie, accountant, and Peter M'Lagan, yr., of Pumpherston."

THE BABRAHAM RAM LETTING.

The name of Mr. Jonas Webb in connection with the Babraham rams has attained of late years, not only an English, but also an European and Transatlantic reputation. The annual letting of his rams by public competition is, therefore, an event of considerable interest in the agricultural world; for although the example Mr. Webb has set has been followed by other eminent and painstaking breeders, he still maintains an honourable pre-eminence. With the constantly increasing recognition of the principle that the best stock must be obtained at almost any cost, by those who wish to occupy a prominent position as breeders, there has also come an increased amount of competition among the proprietors of rams; and several gentlemen who formerly hired animals from Mr. Webb, are now rivals with him in the market he may be said to have created. It is honourable to be foiled with one's own weapons; but it is more pleasant to retain one's superiority; and acting on this principle, Mr. Webb has not contented himself with his first triumphs, but has constantly endeavoured to advance in the path of improvement, and to maintain a respectable distance between himself and all competitors. That he has succeeded in doing so may be seen in the numerous and influential visitors to the smiling plains of Cambridgeshire, the higher prices he has obtained as compared with those realized several years back, and the favourable verdict of public opinion and repute which is generally accorded to him.

But Mr. Webb's merits are too well known to need further comment. Thursday, July 16, witnessed his thirty-first annual gathering; and the railway trains brought visitors from all the adjoining counties, and also from more remote parts of the country. Whittlesford is the nearest station to Babraham, but is between two and three miles distant from it; and the conveyances which plied on the hot and dusty road were eagerly besieged and rapidly filled. Mr. Webb's neighbours also visited him in considerable numbers; and everyone was received by him with the urbanity and hospitality which have contributed considerably to the success of his meetings. Luncheon over, the visitors strolled over the farm, and inspected some splendid shorthorns, one of which is understood to have been sold during the day for 150 guineas, Mr. Webb having of late devoted considerable attention to cattle as well as sheep. The rams, the great attraction of Babraham, were in the usual fields near the house. There were in the list exposed on the ground, one five-year-old, ten four-year-olds, sixteen three-year-olds, fifty-three two-year-olds, and sixty yearlings, or 140 in all. The following table supplies some interesting particulars of each animal. It should be premised that the numbers are those with which the sheep are marked:

FIVE-YEAR OLDS.

No. 2. Put up at 18 guineas; weight of wool, 8lbs.

FOUR-YEAR-OLDS.

No.	Put up at Guineas.	Weight.		No.	Put up at Guineas.	Weight.	
		lbs.	oz.			lbs.	oz.
4	20	10	0	11	10	8	0
5	6	7	8	12	10	10	0
8	10	7	4	13	50	8	4
9	11	6	8	14	70	8	8
10	25	9	4	15	8	7	0

THREE-YEAR-OLDS.

No.	Put up at Guineas.	Weight.		No.	Put up at Guineas.	Weight.	
		lbs.	oz.			lbs.	oz.
19	11	7	8	29	23	9	8
20	18	11	8	30	35	9	0
22	8	9	0	32	10	9	4
23	12	10	0	35	20	9	0
24	50	12	0	36	16	6	4
25	5	9	8	37	11	8	0
26	6	9	12	41	20	7	8
28	6	9	0	42	15	10	12

TWO-YEAR-OLDS.

No.	Put up at Guineas.	Weight.		No.	Put up at Guineas.	Weight.	
		lbs.	oz.			lbs.	oz.
43	10	9	0	78	8	9	8
44	8	10	8	80	8	8	0
46	45	10	0	81	8	8	8
48	8	10	8	82	6	9	4
49	9	8	0	83	10	9	0
50	7	11	0	84	15	9	8
51	8	8	0	86	11	10	0
52	18	8	8	88	35	8	0
54	13	8	12	89	9	9	12
55	18	10	0	92	11	10	0
57	10	9	8	95	9	8	8
58	7	8	0	96	14	9	8
59	11	7	8	97	15	8	0
61	12	7	12	99	40	9	0
62	14	11	0	100	20	8	0
63	11	9	12	101	55	10	0
65	13	8	0	102	19	10	8
66	6	8	12	103	15	8	12
67	6	8	0	105	16	9	12
68	8	7	12	109	20	9	12
69	8	8	8	113	40	10	0
72	13	8	0	114	35	8	4
73	7	7	12	115	130	9	4
75	6	8	8	116	20	9	8
76	8	9	4	117	40	8	8
77	7	10	4	118	16	9	0

YEARLINGS.

No.	Put up at Guineas.	Weight. lbs.	oz.	No.	Put up at Guineas.	Weight. lbs.	oz.
119	15	8	8	168	18	8	4
120	8	8	0	169	7	8	0
121	13	8	0	171	13	9	0
123	6	7	8	173	8	8	4
124	9	7	0	176	8	7	0
126	12	9	0	177	20	8	0
127	10	8	0	178	8	6	8
128	10	8	0	179	7	7	0
129	10	7	8	180	9	6	12
131	35	8	8	181	10	8	0
132	15	7	8	184	9	8	4
136	9	6	12	186	10	8	4
137	8	7	4	187	15	10	8
138	11	10	0	189	9	8	4
140	16	7	4	192	8	8	4
141	8	9	0	193	40	8	0
142	10	7	8	194	8	7	8
143	15	7	8	196	7	7	12
144	9	7	4	197	23	7	8
146	9	11	8	198	23	7	8
148	14	9	4	219	30	8	4
149	11	9	0	220	40	7	12
153	5	7	8	221	40	9	8
154	7	6	8	222	70	9	0
155	16	7	4	224	70	10	0
156	13	9	4	226	60	10	0
160	6	7	0	228	65	8	4
161	12	8	4	230	30	8	8
163	11	7	12	231	30	8	8
164	10	9	0	234	45	9	0
167	13	6	8				

The letting commenced shortly after two o'clock, Mr. King of the firm of Nockolds and King, of Saffron Walden, Essex, acting as auctioneer. The sheep called into the ring in front of the rostrum were started at the prices affixed to them above, and if no advance was made the party calling any sheep in was adjudged the hirer; the highest bidder, of course, taking any ram, in regard to which competition ensued. The results of the letting will be probably best shown in a tabular form:

No.	Put up at Gs.	Realized	No.	Put up at Gs.	Realized
119	15	15	13	50	52
228	65	70	121	13	13
113	40	50	50	7	7
78	8	14	15	8	10
168	18	25	4	20	20
221	40	71	20	18	18
222	70	100	92	11	11
72	13	20	128	10	10
138	11	11	197	23	31
177	20	21	69	8	8
2	18	19	184	9	12
57	10	21	76	8	8
81	8	14	189	9	9
12	10	16	140	16	16
32	10	15	231	30	40
46	45	45	30	35	36
10	25	31	142	10	10
29	23	25	42	15	17
24	50	50	118	16	16
114	35	35	193	40	40
54	13	14	117	40	44
36	16	23	187	15	15
88	35	41	96	14	14
8	10	21	41	20	20
115	130	197	55	18	18
5	6	10	136	9	9
22	8	8	84	15	15
23	12	15	35	20	21
109	20	20	37	11	11
141	8	8	100	20	20
102	19	23	77	7	11
43	10	10	105	16	16
14	70	70			

These were all the rams hired at the public letting. The gross amount at which they were put up was £1,524 12s., and the gross amount they realized was £1,812 6s., which, divided by 65 (the number let), gives an average of £27 17s. 7½d. per head, or upwards of £2 in excess of any year since 1852, with the exception of last year, which was an unusually good one. The competition was rather languid towards the close of the letting, and the circle round the ring thinned considerably. It will be observed, however, that in the early part of the proceedings there was a good deal of activity in the bidding, more particularly with regard to Nos. 113, 221, 222, 57, 8, 231, and 130. The bids for the last mounted up rapidly, the advance being frequently three or four guineas at once. Eventually the ram, which was a very splendid one, was hired by Mr. Sabine, of Newmarket, on behalf of an American gentleman, Mr. Lindsey, of New York; and it was reported that it would probably be purchased, and remain in the United States. It was also stated that 197 guineas is the largest sum ever obtained by Mr. Webb for the hire of a single ram. Among the other hirers whose names transpired may be mentioned the agents of the Duke of Beaufort, the Duke of Newcastle, the Earl of Leicester, and the Earl of Yarborough. The visitors and bidders included Mr. Lugar, Hengrave, Suffolk; Mr. W. Moore, Eastwell Park, Kent (steward to the Earl of Winchilsea); Mr. J. Overman, Burnham, Norfolk; Mr. J. A. Houblon, Hallingbury, Essex; Mr. S. Jonas, Chrishall Grange, Cambridgeshire; Mr. Field, agent to Mr. H. Sherbrooke, Hoxton, Southwell, Nottinghamshire; Mr. H. Woods, agent to Lord Walsingham; Mr. R. Woods, agent to Mr. G. S. Foljambe, Osberton Hall, Worksop, Nottingham; Mr. J. Woods, agent to the Duke of Portland, Clipston Park, Mansfield, Nottinghamshire; Mr. J. S. Sherwin, Bramcote Hall, Nottinghamshire; Mr. Rigden, Sussex; Mr. J. S. Turner, Sussex; Mr. R. Leeds, West Lexham, Norfolk; Major Pemberton; Mr. Stenning, Reigate, Surrey; Mr. Bradwell, Southwell, Nottingham; Mr. Josling, Roxwell, Essex; Mr. H. Bramston, Roxwell, Essex; Mr. E. Turrville, Roxwell, Essex; Mr. H. Beadel, Chelmsford, Essex; Mr. H. Aylmer, West Dereham, Norfolk; Mr. R. B. Aylmer, Norfolk; Mr. Francis Pym, Biggleswade; Mr. Colvin, Essex; Mr. Caswell, Laughton, Lincolnshire; the Marquis de Vogue (France); the Hon. and Rev. Latimer Neville; Mr. J. St. Quinton, Bedfordshire; Mr. D. Watley, Surrey; Mr. Parker Hammond, the agent of Mr. Kekewich, Devonshire; Mr. W. Watkin Wynne, M.P. for Merionethshire; Mr. Sach, Coblentz; Mr. H. J. Adeane, M.P. for Cambridgeshire (and Mr. Webb's landlord); Mr. E. Hicks; Mr. R. Scott, Skerving, Scotland; Mr. J. H. Wilkinson; Captain Davies, R.N.; Mr. S. Clayden, Mr. Waters, Mr. Frost, &c., &c.

On the conclusion of the public letting—with reference to which it should be observed that Mr. Webb had despatched some of his best rams for exhibition at the Salisbury Meeting of the Royal Agricultural Society—the company adjourned to the usual substantial dinner with which the proceedings of the day are agreeably varied. The entertainment took place in one of the farm buildings, which was dressed up gaily for the occasion with evergreens and flags. The Hon. Eliot Yorke, M.P. for Cambridgeshire, presided, and was supported right and left by Mr. Adeane, M.P., and Mr. Wynne, M.P. Mr. Webb occupied the vice-chair at the further extremity of the long shed, and the party, which included the principal farmers of Cambridgeshire, numbered altogether about 300. Dinner concluded, the Hon. Chairman proposed the usual loyal, patriotic, and complimentary toasts, in addition to the health of the Emperor of the French, whom he warmly eulogized. Each toast was accompanied with a diffuse, although fluent and graceful, address from the chair; and as the assembly responded generally with three times three, there was not much time left for observations on purely agricultural matters Having at length cleared his list of his eight introductory toasts, in which the health of Mr. Adeane, "landlord of the soil," was included,

The CHAIRMAN said: Gentlemen, I now come to toast No. 9. I have now reached the crowning point of my work, but I hope not the extreme limits of your patient indulgence; for this—I speak it advisedly—is the toast of the evening. I fear all those that will follow will fall comparatively flat, stale, and unprofitable upon your ears. I except, of course, that of "Mrs. Webb and the Ladies," with whom of course everything will revive again (cheers and laughter). I am, I confess, extremely puzzled to know how I shall place this toast before you in a new form. Our Vice-President, so far as age is concerned, is young in years. Look at the beautiful russet which now mantles his manly cheek—look at his blue eye, how bright it is, and how illustrative of a happy and contented mind! If I was not afraid of shocking your ears, I might say he seems to me to be as strong and lusty as his best tup (laughter). I might also say, that to me he is a painfully old subject (laughter), and that I don't well know how I am to say anything new of him. There, gentlemen, he sits—

"One, chief, in gracious dignity enthroned,
Shines o'er the rest—the pastoral queen—and rays
Her smiles, sweet-beaming, on her shepherd king;
While the glad circle round them yield their souls
To festive mirth and wit that knows no gall."

(loud cheers). Gentlemen, before I bring this toast to a conclusion, I beg permission to justify myself against a charge incurred at the last meeting, which had the authority of some public journal which undertook to report its proceedings. The charge was, that in the ten or twelve speeches which I delivered I did not make one single allusion to agriculture. Gentlemen, in spite of that journal, I feel that I am guilty of the same omission to-day, and that I am open and liable to the same amount of censure. My perceptions are, however, so dull, that after the most diligent inquiry how best to supply this omission, and to couple with the toast already given the subject of agriculture generally, I am utterly unable to find one single spot in which I could dibble a word in respect to it (laughter). Gentlemen, it may be said that I might make a convenient place for myself—that I might select the coming toast of the "Royal Agricultural Society," and thus enter upon the question of agriculture in detail. This may be true; and if true, then am I culpable. But how should I perform my work? Let us see: I might pick other men's brains. I might read a great deal upon the subject, and I might, like some other lecturers, understand very little about it, and yet give you the benefit of my reading (laughter). You might think me very diligent if I did this, but certainly I was not a farmer. Every sensible man would think that I might have occupied myself more advantageously, that I had not improved myself, and certainly that I had not conveyed one single practical idea to practical farmers. There is another mode of doing it. I might transfer myself from the sheepfold to the farm-yard, and place myself among the geese (laughter). I am not prepared to say that it would not be a most appropriate place; for if I proceeded to an essay upon agriculture, I might certainly be deemed to be worthy of a ducking (laughter). I might also transfer myself from the geese to the swine; and if I did, I am satisfied that you could but come to the conclusion that I was the greatest bore (boar) that ever grunted (loud laughter). Now, gentlemen, I don't think that such a course as that would answer any useful or practical purpose. My excellent friend has invited me to preside at his festive assembly. He has preferred me to this seat of honour—for such I consider it—and I must be permitted to fill the office as I best may, according to my own notion of those duties which are inseparable from it. What are those duties but to maintain his guests in the best possible humour? But, gentlemen, although I cannot find room for a discussion upon agriculture, I can give an opinion upon its merits, and of its value as an accessory to the greatness of this country. Lest I should fall short of the dignity and importance of the subject, I will adopt language adorned by the fire of poetic imagination, but retaining all the majestic sublimity of Demosthenic prose. Thomson, in his poem on Summer, gives a description of a hot summer's day—rather, I should say, a parallel one to the present. He sums up the value of the peaceful pursuits of agriculture in the following magnificent and stirring words:—

"A simple scene! Yet hence Britannia sees
Her solid grandeur rise: hence she commands
Th' exalted stores of every brighter clime—
The treasures of the sun, without his rage.
Hence fervent all with culture, toil, and arts
Wide glows her land; her dreadful thunder hence
Rides o'er the waves sublime * * * * *
Hence rules the circling deep, and awes the world."

(cheers). Gentlemen, that is my opinion: I subscribe to it heartily; and although I cannot now present you with a lecture upon agriculture, at least I show, by the adoption of these sentiments, that I am not unmindful of its value. Are we changed for the worse since Thomson wrote? No. When Thomson wrote there was no Jonas Webb, no meeting of this kind, no gathering of many provinces and countries—Parthians, Medes, and Elamites; and if our host had lived in Thomson's time, he would probably have been the centre of that poet's thought. Thomson might have thought, as we do, that Britannia had lost nothing by adding the name of Jonas Webb among her children—nay, more, that he was worthy of a place in his immortal verse, for his gigantic contributions to his country's wealth (cheers). Gentlemen, I give you the "Health of Jonas Webb," and I will add, in the words of David, who sent his messengers to Nabal, the man of Maon (who was also a great man in sheep at the time of sheep-shearing), "peace be to him, and to all his house, and to all that he hath." (The toast was drunk with three times three).

Mr. JONAS WEBB, in returning thanks, said: Mr. Chairman and gentlemen, in rising to acknowledge the compliment you have kindly paid me, I beg you will accept my most sincere thanks. I am afraid our Chairman can hardly hear what I say, and I hardly know myself what it is about (laughter); but it is a great gratification to me to have my health drunk by so respectable a company as the present, and I assure you I am not unmindful of the great kindness I have so often received. One or two gentlemen said to me yesterday, "You cannot always make more money every year; and how can you reply as usual to the toast of your health?" I am, however, gratified by the success of the day, and the liberality shown towards me. Our Chairman, in proposing the Lord-Lieutenant of the county, expected to have got over the duty of formally returning thanks for him by a little "dodge;" and I am glad to tell you that, notwithstanding that I have had very good success in the field, a good many of my friends have become purchasers since dinner. I think they are trying a kind of "dodge" on me now (laughter); and I am very much obliged to them for all the "dodges" they give me. I thank you most sincerely; and I trust every gentleman who has honoured me with his attendance here to-day, will come again next year. Mr. Webb shortly afterwards proposed the health of the Chairman.

The toast was drunk with three times three; and,

The CHAIRMAN having responded,

Mr. ST. QUINTON proposed "The Royal Agricultural Society of England; and success to Mr. Jonas Webb at Salisbury!" In introducing the toast, Mr. St. Quinton observed that the sheep was not only necessary for the food of man, but was also highly necessary for manuring the soil. It was, therefore, a great gratification to those gentlemen who lived in the district, that they had an opportunity of witnessing the approbation which was so deservedly accorded to Mr. Jonas Webb (applause).

Mr. RIGDEN, who was called upon to respond to the toast, said he should be a competitor with Mr. Webb at Salisbury; and he naturally wished success to himself first (laughter). The company knew him well enough, however, to be sure that nothing would give him greater pleasure than, after himself, to see his friend Mr. Webb successful (applause).

Mr. PARKER HAMMOND proposed "The health of Mrs. Webb, and the ladies," and, in the course of a rather discursive speech, observed that Mr. Webb appeared to have looked upon the question which he had made his study in an antiquarian point of view; for he had always upheld pureness of pedigree in the Southdown, without adulteration in the blood. The question appeared to have a twofold aspect—first, the importance of obtaining the greatest possible amount of animal food to supply the 28,000,000 inhabitants of these realms (a Copenhagen Fields view of the matter); and, secondly, the importance of obtaining the utmost possible fineness of fibre in the fleece, and securing a sure and certain home-supply of wool for our woollens, worsteds, and broadcloths. Mr. Webb's success was appreciated not only by the farmers of the district, but by the home county of the Southdown, amidst the breezy downs which girded the white-cliffed shores of England. Mr. Webb's success was also appreciated by the consuming classes, by the great nation of France—now, happily, on terms of alliance with us—and by our kindred across the Atlantic (applause).

"The strangers" (cheers).

Mr. R. SCOTT SKERVING responded, and observed that as Scotchmen were generally found in all parts of the world, they ought certainly to be found at Mr. Webb's annual gathering. He trusted that Mr. Webb would come to Scotland, for his name was a "household word" wherever the cultivation of the flocks was well attended to. The Southdown might almost be said to be an exotic in Scotland; but the Council of the local society of East Lothian had just placed it on an equal footing with the Leicester, which had always been accounted a pre-eminent sheep. He did not mean to say that the Southdown was better fitted for Scotland than the Leicester, because there were many districts in which the Leicester ought to retain its pre-eminence; but he thought that even in far distant Scotland the Southdown might attain a greater degree of perfection. He should carry back to the agriculturists of East Lothian much to induce them to accept Mr. Webb's hospitality on future occasions (applause).

"The health of Mr. Lindsey, the hirer of the highest-priced ram" (cheers).

"Our next merry meeting" (applause).

"The health of Mr. Wynne, M.P. for Merionethshire" (cheers).

Mr. WYNNE, M.P., in returning thanks, said he came from one of the wildest and most mountainous districts in the kingdom, and he wished they had such a breed of sheep as he had seen during the day. Half of the sum for which Mr. Webb's best tup had let would purchase nearly a flock of the sheep of Merionethshire (laughter). They had been very backward in their agriculture; but he hoped the time would come when as good sheep and as good farmers would be seen in Merionethshire as in the county of Cambridge (applause).

The CHAIRMAN gave the health of Mr. Watley, who, he observed, had some claims upon the agriculturists of Cambridgeshire, as he took a large quantity of their wheat and barley off their hands (applause).

Mr. WATLEY responded, and observed that the high character of the produce of Cambridgeshire would always render it acceptable to those who were, like himself, engaged in commercial pursuits. It was to be desired, however, that they should have a little more of the really native produce, and not quite so much artificial.

The company then left the tables, and proceeded to partake of tea and coffee. A large number subsequently remained in the grounds, probably to drive a few more bargains with Mr. Webb.

The following comparative statement shows the number of rams let at the public auction, and the average price realized, since 1852:—

	Number let.	Average price.		
		£	s.	d.
1852	69	22	3	1
1853	71	22	6	3
1854	75	25	4	3
1855	77	25	15	2
1856	77	33	1	4½
1857	65	27	17	7½

PATENTED AGRICULTURAL INVENTIONS.

Of the numerous evidences now surrounding us of the high station to which the science of agriculture has attained, not the least striking and gratifying is, the attention given to it by men of science—our chemists, engineers, and mechanics—in order to aid its progress and develop its resources. Not far distant is the time when a state of matters the very reverse of this existed: agriculturists were then charged, and to a considerable extent justly so, with an indifference which resisted all progress, and treated with scorn all innovations. Carrying on their calling as if it was based upon hap-hazard conjectures rather than upon sound principles, they sneered at the offers which science made to aid them in their operations, and viewed with general incredulity all the advantages she proposed to bestow. No wonder, then, that men of science returned this contempt with studied carelessness, and cared little—to use the words of one who was always slow to censure, quick to praise—to work for those who held "all science in contempt," and who showed themselves so "little grateful for any attempts to instruct them." Happily all this is changed, and the few—how few, let the records of agricultural history tell—who in those dark times formed the exception to the rule, now find themselves surrounded by a host of brethren, who are eagerly aiding the happy union of "science with practice." So changed, indeed, are the circumstances in which agriculture now finds itself, that men of science vie with each other in promoting her interests and furthering her progress. Chemists were among the first to offer her their aid; mechanics followed in their steps, and helped her advancement mightily; and now engineers of celebrity are beginning to perceive that triumphs, less popularly striking perhaps than some which have graced their career in another walk, but not less fruitful of real social benefits, await them in the wide field which agriculture opens up to them—in which they may exercise their ingenuity, and display their skill. The result of this increased and increasing attention to the advancement of the science of agriculture, is the bringing out of a vast number of inventions and processes having special reference to it, and which are secured by patent under the new law; which, we may remark in passing, offers vastly superior facilities to inventors than did the old. A majority of these inventions and processes, it is true, may never get beyond the position of speculation or crude conjecture, but a few comparatively, being developed so as to be carried out into efficient and economical practice; nevertheless, a vast deal of practical information may be, and is, derivable from an investigation of the records of these inventions, even from those which come under the first-named category of speculative or conjectural (inventions so called). If they serve no other purpose, they point out the direction in which men have been attempting to go forward, and act as beacons by which dangers and delays may be avoided, and the quickest and safest passage secured. Apart from its utility, moreover, such an investigation of the records of invention is sure to be interesting to all anxious to be acquainted with the gradual progress of the science with which they are connected. To those who wish to avail themselves practically of inventions calculated to be of service to them in their daily avocations on the farm, or who may themselves wish to enter the lists of inventors, the value of the information derivable from the study of what has been already attempted, cannot be overestimated. He who attends, as we have elsewhere remarked, "carefully to the labours of his predecessors in any walk or branch of science, is much more likely to arrive at his proposed destination with greater ease and in shorter time than he who carelessly avoids what may be termed the finger-posts of experience set up by those who have gone before him. The failures which have been recorded on the one hand, and the discoveries of truth which have been registered on the other, are just so many helps to the anxious inquirer, by which he is enabled to lose no time in searching the by-path jutting from the main road; but knowing the right direction, he pushes on heartily to his destination." There can be little doubt, indeed, of this, that if the inventors of the last thirty years in the various branches of our mechanism had had the advantage of the records of the attempts made by preceding inventors, our present position of mechanical excellence would have been as superior to what it now is, as it is to that which obtained in the times of Arkwright or of Watt. "A cursory perusal" even, to quote the words of an excellent authority, "of documents containing accumulated knowledge, can hardly fail to suggest some idea novel to the reader; and as invention progresses step by step, and is the result of some improvement added to what was before known, the value of such information is too great to be duly estimated. Watt did not invent the steam-engine, nor did Arkwright invent cotton-spinning machines; but it is well known that what they did was, just to study the defects of existing machines, and then to add improvements which not only produced to themselves ample fortunes and abiding fame, but to the country a degree of prosperity which has no parallel in history." Nor are these statements true only of mechanical inventions: they apply with equal force to discoveries in other branches of art or science. Take, for instance, *manures*. We have now before us a recent publication of the Patent Office, namely, "Abridgments of the Specifications relating to Manures." We have had occasion to go over this very carefully, and were struck with the singular similarity existing between several of the patents taken out at different periods—some of the processes, indeed, almost entirely identical. Now this would not have been the case, at least to so large an extent, had parties proposing to patent what they conceived to be new manures, been acquainted with what had already been done or proposed by those who had preceded them.

Seeing, then, the utility of investigating the records of discoveries or inventions in matters relating to agriculture, and in view of the rapidity with which they are now brought before the notice of practical agriculturists, we have deemed it fitting to devote at intervals a short space, in which to glance at what has been already done, and what is daily doing in the most important branches of agricultural invention or discovery. So far as at present arranged, we propose to confine ourselves to the departments of "the mechanism of steam culture," "reaping machinery," "drain tiles and pipes," and "manures," leaving for future consideration the departments of mechanism connected with the preparation of the soil, as ploughs, scarifiers, clod-crushers, &c., or of that connected with its products, as thrashing-machines, turnip-slicers, straw-cutters, &c.: these departments may hereafter engage our attention. We may here note that we do not intend to follow the order we have above named; but shall take the subjects up in whatever order they may most conveniently present themselves.

Under the new "Patent Law Amendment Act, 1852," the specifications of every patent, and the drawings which illustrate it (if any), are printed and sold at a small charge. This arrangement is a great boon to inventors, as it places within their reach the means of carefully studying the peculiarities of any invention in which they may feel an interest. But the benefit of this arrangement is not confined to inventions patented under the new act, but is extended to those which were secured under the old. This latter, however, being a most extensive undertaking, has not yet been fully carried out, although the publication of the vast array of patents is very satisfactorily proceeded with, a large number being already in print. The patent specifications of the old and the new acts being, as may be easily conceived, very voluminous, to aid parties desirous of consulting any special one, the patent commissioners have very judiciously prepared, under the direction of their able superintendent, Bennet Woodcroft, the well-known engineer and inventor, a series of valuable indexes, *chronological*, *alphabetical*, and *subject-matter*, embracing the period from March 2, 1617, up to the present year. These indexes, containing a large amount of useful matter, have, in their turn, become, like the specifications whose existence and nature they serve to indicate, so voluminous that, "placed beyond the reach of a large number of inventors and others to whom they have become indispensable," it has been considered necessary to prepare "short abstracts or abridgments of the specifications of patents under each head of invention," so arranged "as to form at once a chronological, subject-matter, reference, and alphabetical index to the class to which they relate." Of the abridgments already published, two only possess a special interest to our readers—one on "Manures," and the other on "Drain Tiles and Pipes." A glance at these will afford matter for future articles.

R. S. B.

THE PROMISE OF THE WHEAT CROP.

It would tend to the general advancement of agriculture if calculations upon growing productions could be easily and readily estimated. Such, however, are the difficulties by which this undertaking is surrounded, that we fear that it could scarcely be accomplished with sufficient accuracy and celerity to be rendered more advantageous than by the present mode through which the papers disseminate information upon the harvest and its antecedents.

We ventured an opinion at the commencement of this month upon the prospects of the coming harvest, and which opinion is now likely to be borne out to the fullest extent—viz., that the wheat plant had, by coming into ear quickly, during weather of an unusual warm and settled character, established itself, with fewer chances of blight succeeding than usual. As the weather had previously been unusually dry, the chances of a good crop were far greater than in almost any antecedent season. And now that the wheat is approaching maturity, we find all our anticipations about to be realized; not over a limited space alone, but throughout the whole kingdom. We venture an assertion, that we consider few will challenge, of there being less deficiency this year in the wheat-ear than the oldest farmer remembers. This will go far to compensate the deficiency in bulk even in those districts affected by the natural dryness of the soil. It is thus far obvious that the quality and quantity of the wheat crop depend materially upon the state of the weather at the immediate time of bursting into ear, rather than to any other causes. When moreover the earing-time has also been preceded by dry weather, those chances are increased in a proportionate ratio. Much, however, depends upon the nature and quality of the soil; but in a universally dry season less apparent difference become visible than in one of a moist character.

One of the most formidable enemies of the farmer is the destructive small fly called the "wheat midge," which, although barely visible to the inexperienced eye, in some years effects injury to the extent of from 20 to 25 per cent. In some pieces it has been computed that one-half the grains have been destroyed by the small orange-coloured larvæ that result from its attacks; but very fortunately it rarely occurs that injury to such an extent takes place. And it is only in moist and cool seasons, at the time of the wheat earing-out, that the greatest damage follows. In hot and dry seasons like the present, whatever may be the number of flies, but little damage is effected by them should the weather continue hot and dry immediately after the wheat has got into ear. This is apparent by one side of the ear only becoming affected, being that which first protrudes from the sheath; but if it remains for a day or two in that state (which it invariably does in cool and moist weather), then the ravages will be found to be twice as destructive as would have been the case had the weather been dry and warm, so as to have brought out the wheat ear in the space of a few hours only. The state of the weather at the time of earing-out of the wheat also operates very greatly upon the yield of the crop. A frost during night at that period acts most injuriously upon the young tender ear; and to such an extent that one-third downwards of its whole length frequently becomes blighted. From any such a visitation we have entirely escaped this season.

In addition, there is also a large catalogue of blights and injuries sustained by the wheat crop during moist and cool seasons that are scarcely apparent in dry and warm ones. Of these, all those of the parasitic fungi tribe are most destructive; especially those known by the name of red rust, red gum, red robin (*uredo rubigo* and *uredo linearis*), as well as that dreadful scourge known as mildew (*piccinia graminis*), and which is hardly apparent in warm and uniformly dry weather.

Whatever may be advanced to the contrary, it is quite certain that the influence of season has more effect upon the crop than any other cause whatever, and probably more than all others combined. Wheat delights in a dry and warm atmosphere, especially at the period of coming into ear. This obtained, more than counterbalances any other influences. It is now decided that the present crop will be a full average one —in many instances a very prolific one. The strong heavy lands of good quality will produce an abundant crop, that will more than compensate the deficiency found upon the light and arid soils. Still even upon the threshold of the harvest we may be too sanguine; but with the weather in accordance with the prospects, there is little to fear but that the crop throughout England will be the best since 1850—not only as regards the yield, but in point of quality also. And a bountiful crop is one of the greatest blessings Providence bestows upon man; the producer as well as the consumer alike participating in the benefit.

KENNINGTON AGRICULTURAL AND CHEMICAL COLLEGE.

LECTURES ON THE GENERAL PHENOMENA OF THE EARTH, HAVING REFERENCE TO THE PRODUCTION AND MAINTENANCE OF ORGANIC LIFE.

BY CHARLES JOHNSON, ESQ., PROFESSOR OF BOTANY GUY'S HOSPITAL.

No. XII.

In our last lecture we have discussed some of the physical relations between vegetables and animals, and the uncertainties under which we labour in the examination of the lower grades of both. We will now direct our attention to those forms of the first that are capable of being unequivocally regarded as such, examine their structure, and note whatever other circumstances, attaching to their history, may appear likely to assist our endeavours to obtain a knowledge of their value in the general system of Nature.

The adjective term "mineral" is applied, properly, to all modifications of substance which are not organic; but, as already noticed, certain combinations of matter are never met with except as associated with animal or vegetable life; while many of the forms of that life require, for their production and maintenance, such an assemblage of elements as can only be brought together by the agency and pre-existence of others belonging to the same class with themselves, to a higher, or (primarily) to a succession of many of a subordinate character. All the operations of organic existence, its alternate production and decay, tend to the fulfilment of this circumstance; and the preparatory process is assigned—upon the land, at least—to the lower and less conspicuous forms of vegetation.

Botanists, amid their varied and often complicated systems of classification, can never lose sight of certain grand natural assemblages, or rather types, of vegetable organization, which, regarded on a broad scale, may be reduced to nine essentially-marked terrestrial forms—viz.: 1, lichens; 2, mosses; 3, ferns; 4, grasses; 5, palms and lilies; 6, firs; 7, trees and herbs; 8, parasites; 9, funguses. The limits of these groups are not in all cases strictly definable; and certain smaller ones occur which do not well associate with either, partaking of the characters of two or more, and thus apparently constituting links of connexion between them: but, setting these aside, their generalities are too obvious to be overlooked by any but the most careless observer. The succession of the several groups, as here recorded, is, structurally considered, correct; the order of their appearance in Nature, perhaps, only partly so: still, in the common course of sequence, the lichen is succeeded by the moss, the moss by the fern, while the grasses and other flowering plants follow; and, as disease and death overtake these latter, the parasite and the fungus fasten upon them, and hasten their dissolution.

Whatever may have been the circumstances under which vegetation commenced upon the earth's surface, the successional process is that which now prevails. We may see it in action, slowly but surely, in every spot that man has not brought under his own immediate dominion, or obvious causes rendered desolate. Nature is there at work, with unceasing labour, to maintain the necessary supplies of nutriment for her vegetable offspring. Some small number of species only, among the higher orders of plants, have a constitution fitted for flourishing upon the loose and shifting sand, or to dwell rooted in the crevices of the hard and insoluble rock; but even these are not exceptions to that universal law on which the existence of all the visible forms of organic being is now dependent. They live and fatten on the wrecks of others, that have themselves lived and fattened on the relics of an earlier and long-extinguished race that drew its nourishment from those of others yet beyond it in the course of time; and this has been the currency of matter, from a period which man in vain attempts to trace to a beginning, in the silent records of an era that must have long preceded his own introduction to a world, of which, with all his boasted science, he knows so little. The fabled phœnix of ancient philosophy was but a type of the perpetual reinstalment of living being from matter which had lived, and lived before. The lowest orders of plants only can subsist upon the crude elements and their simpler combinations: the higher, and more especially those whose seeds and leaves and roots teem with sustenance for man and his animal associates, require for their support particles which have already been under the vital influence in some pre-existent form. And these are copiously supplied. Is a rock projected from a volcano, or a stream of lava cooled upon its sides—is the stone quarried out of the bowels of the earth, and raised into a lofty building upon its surface—vegetation will not long be wanting to clothe them all; but it will commence with the simplest of its forms—with plants so minute, that even the practised eye of the botanist will scarcely detect their presence, unless with the assistance of his microscopic glasses. Generation after generation of these mere points in creation must spring there, and pass away, before the grass and the wall-flower and the rock-rose can find food and a resting-place; and myriads after myriads of these must vegetate and wither on the deepening soil, before it can yield the richer harvest of cultivation. Is a forest of oaks to be raised upon the plain or the hillside—is the corn-field to lift its golden grain, or the garden to bloom redolent with beauty or utility to man—Nature must have worked for ages to accumulate, above the hard and barren surface of the rock, the rounded gravel, and the yielding sand, a mass of matter differing from them all, and which, having once been organized, needs not again to be filtered through the varied forms which originally appropriated and progressively moulded it for the purposes of fertility.

The earliest pioneers of terrestrial vegetation are, everywhere, the lichens; a numerous and diversified tribe; the individuals of which present every variation of structure, from the solitary microscopic cell, self-multiplying, to that of highly-organized membranaceous and intricately-branched bodies, bearing a complicated fructification. A parallel series of organic productions inhabits the waters; to some of the simpler forms of which I have already alluded, as exemplifying the lowest observable grades of vegetable life. The collective term Algæ, employed by botanists to denominate these, includes, however, a host of species, that from mere cellular points vary to simple or branched filaments, and thence to broad leaf-like expansions and even gigantically-elongated stems, the latter often bearing prefigurations of organs familiar to us in the highest grades of vegetable life. To the inexperienced observer, no relation would seem to exist between these aquatic organisms and the lichens, and the parallelism above-mentioned might appear utterly without foundation; but, structurally considered, they approach so nearly, in many instances, as even to render plausible the supposition, noted in the previous lecture, that their spores or seeds may be so far really identical, as to render their production in the one or the other form dependent upon the character of the medium in which they vegetate. However disinclined we may be to cherish such an assumption, the resemblance must be admitted; and, farther, the possibility that the alga and the lichen commenced, as they now pursue, their ministry simultaneously, as preparatory to the grand process of maintenance to those above them. At what geological epoch their forms first appeared we have no means of deciding. Textures so fragile and fugitive, so minute and obscure, as those of their lower grades, have not survived the process of fossilization; a process which, in the animal kingdom, while it has preserved for our examination the bone, the shell, and the coral, has been incompetent to retain the softer tissues which these accompanied. Hence only a few doubtfully-recognizable algaceous plants are met with in the earlier fossiliferous rocks, and those of the larger and more conspicuous grades; while of lichens scarcely a trace exists. The absence of the remains of such vegetables is, however, as previously stated, no proof of their not having been present in the primeval seas, and adhering to the yet-unabraded surface of the granitic peaks by which their waters were first divided.

In enumerating above the great natural groups, I have noticed the terrestrial forms only, not admitting the algæ into the series, they being peculiarly the vegetation of the waters, and in this respect opposed to every other production of the vegetable kingdom; of which the species, most essentially aquatic, belonging to other groups, require, more or less constantly or periodically, the direct influence of the atmosphere for the fulfilment of their vital functions. Their colonizing influence is not so open to our observation as is that of their terrestrial parallels; but they fulfil offices of such vast importance in the maintenance, on a broad scale, of all organic life, as to claim, perhaps, even a more especial notice of their agency. In the introduction to my descriptions of the species found in the British seas, in the second edition of "English Botany," the general history of this interesting series of plants has been sufficiently developed to answer our present purpose, both as regards their diversified structure and value in the economy of Nature; nor can I better fulfil the end in view, than by adopting the same, with such slight alteration as the nature of the subject before us may require.

Contrary to the habit of the lichens, many of which dwell on the driest and apparently most inappropriate spots for maintaining vegetable life, the algæ grow almost universally submersed; a few only of the simpler kinds vegetating on damp ground, rocks, and walls, and these always in situations where water is present, either accumulated or transfusing: it is the element of their existence. As before alluded to, their simplest observable forms appear as single cells of exceeding minuteness, consisting of a delicate translucent membrane, filled with a fluid or mucous matter and innumerable little, coloured granules; the granules enlarge gradually, and eventually burst the including membrane, becoming the sporules or seeds of the succeeding generation: such are the species which seem at present to constitute the lowest extremes of organization. The little cells in question, here regarded as distinct existences, are often found, like those of the Protococcus or red-snow plant described in the tenth lecture, scattered promiscuously upon a thin film of slimy or gelatinous substance.

Another series, higher on the scale of structure, is seen in those finely-pencilled or filamentous plants that form so large a proportion of the more brilliant and beautiful examples of marine vegetation. In many of these, which are composed of vesicles placed end to end in indefinite lines, the microscope discovers each filament to be invested by a transparent film, so that the condition of such a plant might be represented, not unaptly, by suspending a necklace of hollow beads within a glass tube. This tube in the living plant is glutinous, and occasions most of the more delicate kinds of sea-weed to adhere firmly to paper in drying. A similar coating is found upon the larger and more complicated species, in which it may be considered to prefigure the cuticle or outer covering of skin that invests the surface in the higher order of plants. This transparent tube, which gives a continuous or even surface to the otherwise jointed, hair-like stems and branches of a Conferva, accords so nearly in appearance and composition with the expanded film upon which the cells of Protococcus and several of its allies are found reposing, that there is no slight reason for believing them primordially similar, and that they only differ in consequence of the different degrees of vital energy regulating the growth of their respective cells, which where separate, are too feeble to overcome the inertia of the substance on which they are generated; but where combined, convert it by their greater assimilative power into a protective cover.

A third great natural division of these plants includes the larger kinds of sea-weeds, through the several grades of which the cellular structure is capable of being traced to the most elaborate and complicated forms of which it is susceptible. In these the cells become aggregated in breadth as well as in length, constituting broad leaf-like expansions and cylindrical or flattened stems and branches.

The modes of reproduction in the higher algæ are greatly diversified, so far as external appearances are concerned, though in reality the germs themselves seem to be of corresponding origin to those of the lowest; in other words, to consist individually of the cell-granules. In the more simply-constructed of the filamentous or hair-like species, propagation takes place by the effusion of these granules, the cells which contain them being ruptured indiscriminately by their enlargement. In others of more advanced and complicated character, the terminal cell only of the filament or of its branches dilates and assumes the office, and with it the appearance of a fruit or seed case; while in other instances similar cells are developed in the axils of the branches for the express fulfilment of this function, the varied modifications of which it is here unnecessary to pursue.

Some of the algæ float loosely in the water, but by far the greater number of the species grow attached to rocks, stones, and other substances; sometimes simply and precariously adhering by the first formed cell, more frequently by the extension of their bases into a plane or concave surface; or otherwise the same part throws out many fibres, or in the larger kinds cord-like processes, by means of which it grapples so firmly to the stone as to be almost inseparable without laceration. In either case these processes are rather to be regarded as prefigurations of root, developed only to secure the plant a fixed habitation, than as fulfilling the more active functions belonging to that important organ in the higher classes of vegetation: the nutrition of the algæ being apparently derived by absorption from the surrounding medium, taking place over their whole surface.

The distribution of this vast series of aquatic organisms, of which at least two thousand species are known to exist, is, like that of aërial or terrestrial plants, much affected by climate and other local circumstances. Some of them seem to be limited to the colder or temperate parts of the globe, others only exist in the warmer. Among those of marine development, almost every sea and gulf, and every geographical department of the main ocean, possesses its characteristic vegetation. Like the plants of the land, too, they are apparently influenced by soil, or rather, perhaps, by the nature of the rock to which they adhere, certain species being never met with but on media of peculiar composition; thus limestone, chalk, sandstone, basalt, &c., favour each the production of some species in preference to that of others—a phenomenon probably dependent rather on their surface texture than mineral character. Another circumstance deserving notice is their individual tendency to solitary or associate growth. Many kinds are but sparingly scattered or of rare occurrence, while others delight to vegetate in masses. Some of the smaller species cover large extents of surface, to the exclusion of every other, as the grasses do our meadows and pastures; while many of the larger are aggregated in mimic woods or forests, each as striking in its characters, and as diversified in its appearance, as those of the earth, in which the oak, the beech, the hornbeam, and the fir respectively occupy the soil and exposure to which they are naturally the best adapted.

Considered in the aggregate, the vast mass of aquatic vegetation is of small immediate importance to mankind. A few of the marine species are employed as food, especially in times of scarcity, by the poorer inhabitants of our own sea-coasts, as well as by those of other countries; while three or four of the number have even found their way to the tables of the luxurious, originally, perhaps, introduced with a view to medicinal effect in scorbutic and scrofulous habits, though the discovery of *iodine*, the principle upon which their action in such cases depends, has long since removed them from the province of the physician. Consisting chiefly of mucilage and albumen, they are nutritious, and, in the absence of all deleterious proximate principles, wholesome; the latter character being due to the simplicity of their cellular structure, which renders the lower orders of plants generally incapable of elaborating the acid, alkaloid, and other combinations that render so many of the complex forms of vegetation poisonous. The species best known, and employed as food in Europe, are *Ulva lactuca* and *latissima*, called green laver; *Porphyra laciniata*, purple laver; *Rhodomenia palmata*, the dulse of Scotland; and *Chondrus crispus*, the carrageen or Irish-moss of the druggist and herbalists. *Rhodomenia*, especially, is much prized, and besides being used as human food, is largely collected on some parts of the shores of Norway and North Britain as fodder for cattle, cows and sheep being so fond of it, that they are, not unfrequently, lost by straying out too far upon the rocks in search of it when the tide is down. To these species may be added *Gracilaria lichenoides*, Ceylon-moss, much imported of late years, and recommended as a substitute for animal jelly: it is the vegetable substance of which the sea-swallow, *Hirundo esculenta*, of the Indian Archipelago, constructs its edible nests, so much valued by Chinese epicures, as frequently to be sold in Pekin for their weight in gold. The use of the larger kinds of seaweeds for burning in the manufacture of *kelp*, and of the promiscuous masses thrown on shore in stormy weather as manure, will nearly complete the list of man's economical adaptations of a vegetation, constituting one of the most important features of the world he inhabits.

Limited as is the employment of the alga in human economy, it does not appear to contribute on a scale proportioned to its abundant production to the maintenance of the animals belonging to its native element. Of the multitudes of molusca and crustacea that seek shelter, food, and recreation, in the submarine meadows and groves, a comparatively inconsiderable moiety derives subsistence from a still smaller number of species; and the great mass of oceanic vegetation lives and multiplies its kind, and dies, without seemingly fulfilling the purpose to which, on the first glance, we might suppose it destined. To estimate the value of these obscure productions of a medium so widely diffused as water, we must reflect that the economy of Nature is based on a wider foundation than that of man; every item in her code has an influence, a bearing upon every other; and the more obvious reading of one of her laws of action often proves on examination the less correct, if not indeed altogether mistaken and untrue.

The numbers and universal distribution of the plants before us are evidence of their utility. The ocean, in every part, from the Polar seas to the Equator, swarms with them; they dwell in every river and lake, in every stagnant pool and ditch; even the ice and snow of Greenland and Nova Zembla have their species, so have the fountains of the boiling Geysers. Of their ministry we know not the extent. We know that water exposed to the light of the sun for a day or two, deposits a green crust upon the interior of the vessel that contains it; and that if from any cause this deposit does not take place, the water becomes putrid, within a longer or shorter period, depending upon the temperature under which it is kept. We see in every little pool left by the rain a similar green matter formed; and if it remain a sufficient time unevaporated, light-green fibres grow across each other in every direction through the fluid, which under these circumstances retains its freshness and limpidity. The simple confervoid plants, to the presence of which this appearance is due, are performing here, on a small scale, similar functions to those that are incessantly operating upon a larger scale in the ditches, stagnant ponds, lakes, and slow rivers; they are assimilating to their own support and growth those putrescent particles of animal and vegetable matter, that, accumulating from time to time, produce those fatal exhalations so long observed and dreaded under the names of *miasma* and *malaria*. They may not, indeed are not, in all situations proportioned to the quantity of these, but must always act as a powerful check to the increase of the evil; and the more so, owing to the abundance of oxygen gas which many of them evolve under exposure to the sun.

The influence of the sea-weeds upon their natural element is probably similar to that observed of the fresh-water species. This vast body of water, abounding in animal life, would, by the natural exuvia of its inhabitants, soon become incapable of supporting their existence; but independent of this, it is the grand cesspool of the earth, receiving on every side into its mighty basin all that is most noxious to the dwellers of the land: every tide sweeps nuisance from its shores; every river bears, with ceaseless current, its tribute of offal to this general reservoir, acting as the scavenger as well as the fertilizer of the country along which it flows. How admirably are the abundance, the rapidity of growth, and universal distribution of the various species of marine vegetation disposed to rectify this, to purify the wide expanse of waters, which must, otherwise, quickly spread the seeds of death to every living thing upon the earth by its putrefactive poison! The algæ of fresh waters are of thin, slight texture, and contain but an exceedingly small proportion of solid matter compared with their bulk; those of the ocean, on the contrary, growing with equal rapidity, present a vast series of species of hard, tough, frequently almost woody substance, and, consequently, requiring for their support a larger quantity of the assimilative material so constantly and abundantly supplied.

Independent of the office thus performed, one so essential to the well-being of the entire animal world, the vegetation of these plants is no less instrumental in maintaining that perpetual reiteration of change among the elements of matter, without which organization must cease, and at the same time fulfils a variety of other conditions of equal importance to the existing creation.

While the purifying and assimilating processes are going forward with uninterrupted course, the algæ are condensing the new products, and, by their own annual growth and decay, depositing a future source of fertility in the sand and mud, over which they spread, to be brought into action when by some convulsion of our earth's surface the present sea-basin may be successively upraised and destined to bring forth land produce. Even the small and delicate fresh-water species contribute to elevate the bottoms of lakes and pools in which they grow, and convert them by the after-assistance of mosses and aquatic grasses into marshes, such spots eventually merging, through the intervention of plants of higher organization, into woodland and pasture, open to the improvement or adaptation of civilized man. Through such associations, a series of vegetable existences, apparently severed from human economy by their obscurity and situation, become objects, not of curiosity alone, but of value and high interest to the student of nature.

FALLOWS.

In the Book of Exodus, chap. xxiii., verses 10 and 11, we read: "And six years thou shalt sow thy land, and shalt gather in the fruit thereof; but the seventh year thou shalt let it rest and lie still." This was the law which God gave to the Israelites, and is the first intimation we have in the world's history, from which we may gather information relative to the requirements of the soil, and the early usages in agriculture; for I take it to be analogous to what is generally understood, in our day, to *mean* lying under fallow, or to constitute fallowing. Be that as it may, it is certain that fallowing was practised, and was one of the regular systems adopted in the management of land, from the earliest periods of which we have any record. It has, however, been reserved for a very recent age to make any great advances in fallowing, and to adopt totally different courses in the appropriation of land undergoing a fallow. The fallowing of land has now become a subject of very considerable scientific research, and is of immense agricultural importance, as upon the fallow crop mainly depends, in the present day, the ultimate success of the whole system of modern farming. No green crop, no corn crop. The ancient idea of *rest*, adopted by the Jews, pursued by the Romans, and all other nations adopting agricultural pursuits, has been nearly abandoned in this country during the past half-century; and, instead of *rest*, the soil or land farmed is now made to bear enormous crops of highly-nutritious food, thus providing most abundant supplies for man and beast in the season of winter, when so much needed; and, at the same time, the soil is so replenished with all those necessary constituents, as to ensure successful cereal cropping for several succeeding years.

What, then, are fallows? and what do we understand to constitute fallowing, in the present day? Fallows consist of all lands or soils which are undergoing the process of pulverization, cleaning, aëration, and other amelioration, by the various means employed, either mechanical or otherwise, for these purposes. They are usually classed under several heads, or distinguishing modes of management—*i. e.*, *winter* or *autumn fallows*, *summer fallows*, *bastard fallows*, *green-crop fallows*; to which may be added *trenching fallows*, *broadshare fallows*, *rafter fallows*, and the like; as also the various operations of *paring and burning*, *skim* and *skeleton ploughing*, *scarifying*, *subsoiling*, or other like means by which the process of cleaning, exposure, amelioration, or improvement of the soil is attempted or effected. The soil, therefore, which is subjected to any mechanical agency or order of management, for the above purposes, is under a certain course or character of fallowing, and, accordingly, constitutes fallows.

What, however, are more commonly known as fallows and fallowing, are those various operations of tillage which are carried on, and are indispensably necessary, to prepare the soil for a fallow crop (green crop)—*i. e.*, turnips, mangold-wurzel, rape, and the like—and those more continuous operations to prepare for the future wheat crop, being a bare or summer fallow, which on poor clays and some other soils is considered necessary. Winter or autumn fallows are those lands which have undergone various modes of tillage in the autumn, and are subsequently laid well up by the plough for winter aëration by frosts, snow, &c. Bastard fallows consist in the partial working and cleansing of the soil, prior to the putting in of the crop. Trenching fallows are the efficient trench-ploughing of the soil, for exposure to atmospheric influences, and are chiefly used prior to the coming of winter's frosts, by which it is much ameliorated and greatly benefited. Broadshare fallows are the breaking up of the surface-soil for cleaning, by harrowing, &c.; and to promote the speedy growth of annuals, in order to ensure their ready extirpation. Rafter fallows are the ploughing of one furrow on to the adjoining strip, to promote aëration, &c., by more prominent exposure to atmospheric influences. Paring and burning, though not strictly coming under the appellation of fallows, are in fact a fallowing. The soil is pared, exposed, dried, burned, and spread, ploughed in, and well harrowed, by which course most of the intentions of fallowing are attained. Skim and skeleton ploughing are almost synonymous with broadshare fallowing. Scarifying fallows are the continual application of powerful drags or scarifiers, to move and expose the soil at considerable depth, so that atmospheric influences may have greater effect. Subsoil fallows are the breaking up of the subsoil at great depth, and bringing it near to the surface, for aëration, amelioration, and intermixture with the surface-soil, and is a wonderful improvement upon the old order of fallowing.

Take the astonishing fact as proved by the experiments conducted under the eye of Mr. Lawes. Good loamy soils contain a large superabundant stock of ammonia: required that it be brought into useful action in promoting the growth of plants. Here, then, we learn the true idea and benefit of fallowing. It is proved by Mr. L. that an acre of average loamy soil, taking it at one foot in depth, contains about three tons and a half of ammonia. The best Peruvian guano contains about seventeen per cent., or about equal to eighteen pounds to the cwt.; most of the home-made guanos and manures a far less proportion; and yet apply some of these to advance the growth of a crop, and the result is astonishing. The direct application of a few pounds of ammonia results in a surprising accession of strength and power to advance vegetation and mature the crops, while at the very time the soil abounds in the identical constituent, and only requiring or waiting the skill of man to be made available. It is by deep, continuous perseverance in fallowing that this can best be accomplished. By this, we mean those oft-repeated deep stirrings of the soil, whereby the greatest number of particles can be brought into contact with the atmosphere, and laid open to the action of the sun, winds, rains, frosts, dews, &c., and that without being run together by excessive rains, or compressed too much by field-rollers; in fact, the soil requires to be kept open, chequery, and friable during summer working, and at as great a depth as possible consistent with the character and staple of the soil.

We often look forward in hopeful anticipation of the grand advent and full development of steam cultivation for this purpose. We are fully assured that our present appliances are altogether inadequate to bring out truly and fully the inherent and latent powers of the soil, in the limited time included in an English summer, without the loss of the green crop, which on no account can be dispensed with. We frequently find ourselves desiring the aid of all the horses in the parish (not a little one) to make proper use of the all-important time for fallowing. The doing enough in season seems an impossibility with our present means. We do bring to bear all the available power of the farm, besides occasional extraneous aid, and our crops equal those of our neighbours; but this is achieved mainly by the expensive additions of guano, superphosphate, or other similar applications, along with a very liberal dressing of farmyard dung. But this is not the all-important point: we want to gain more power, more nutritive food for the turnips and other plants from the existing stock in the soil itself; and this can only be done powerfully, and must chiefly be obtained through the intervention of deep, continuous fallowing or working the soil, in the precise, the exact season, when the sun, winds, rains, and dews act most in conjunction and effectively. The greatest amount of heat and drought is required; but these would be nearly if not totally inactive without rain-water or distilling dews. Those of us who read a little, if but superficially, those works and papers of our agricultural chemists which are continually appearing in the public prints, learn that rain-water is one of the most powerful essentials yet known or discovered for setting free the ammoniacal constituents in the soil, and preparing its wonderful powers for the food and nourishment of plants. These agricultural chemists tell us that many of the component parts of soils have been subjected to the most intense chemical experiments, with the view of extracting their inherent values: they have been boiled in the most powerful acids known, without effect; but when the same or similar ingredients have been repeatedly, continuously subjected to atmospheric changes by the unremitted, free, deep working of the soil in fallowing, in the proper season and under proper judgment and management, these exceedingly valuable chemical essentials are, by these means, aided most powerfully by occasional rains, disintegrated and rendered available for every farmer's use. It is to obtain these invaluable properties from the soil that ought, and ultimately will constitute the chief design and aim in fallowing land; while, at the same time, the soil by these various operations is much better prepared to receive and render most available those deposits of manure which every farmer's judgment will dictate the application thereof to advance his growing crop, and to ensure it from loss or injury, as the quicker its growth in its early stages the greater safety.

What, then, are the tillage processes or courses of management which are necessary to constitute a good modern fallow?

The first process should commence in the autumn, as early as possible after the removal of the crop, and should consist in breaking up the soil at a slight depth, just sufficiently deep as to produce a mould, on working it, to cause the vegetation of all the seeds of weeds, and ensure the uprooting of all the roots, both of weeds and crop, growing near the surface. The subsequent scarifying and harrowings should suffice to reduce the whole to a fine tilth, and to shake out and bring to the surface all the rubbish, which should immediately be collected, either to be burnt, or carried into the fold-yard for conversion into manure. The advantage gained by this autumn process in culture is the destruction of the seeds of annuals and other weeds common to the soil, the removal of all the refuse of the last crop, so that the land is so cleaned from surface weeds, that no obstruction occurs in the future management; to which must be added the very valuable aëration of the soil which takes place from this repeated working at this precise season of the year, when the atmosphere is more fully charged with the effluvia arising from so much decayed and decaying vegetation, arising from the ripening and decay of all the straw crops, the stubbles, the falling leaves, the ditch roadings, the numerous grasses, and the like at this season; which effluvia, it may reasonably be supposed, are deposited in the soil thus prepared, and there retained for future service; but if this process is neglected, and the soil remains unbroken, the morning's sun speedily dissipates the nightly deposits, and no benefit is derived.

The next, and perhaps the most important operation in fallowing, consists in breaking up the soil at very considerable depth, the deeper the better, provided the staple and character of the soil do not present any impracticability in the turning-up of any sterile, unconvertible subsoil, so incapable of improvement as to be of little avail when brought into use. But good loamy soils cannot be broken up at too great a depth with our present appliances; and all other soils ought to be broken up at a depth proportionate to their nature and thickness of surface soil, taking care not to bring up and intermingle with this surface soil at any one operation too much of any of those hard, stiff, impervious, or inert subsoils so often met with. These inert soils may, and ought to be, brought gradually into useful action or service; but to attempt too much at once serves only to retard the ready and profitable cultivation of the soil; but ultimately, from oft-repeated deep processes of culture, the surface soil and subsoil become so intermingled and gradually deepened that vast benefit is derived, and of course heavier and more varied crops may be grown. On every soil, the great rule by which to regulate the depth at which it should be broken up is the depth of the roots of surface weeds; these should all be uprooted, so that they may be readily and speedily worked to the surface by the subsequent processes, in order to be picked and carried off. I use the term *breaking-up* in preference to ploughing-up advisedly or designedly, because I consider the mode of breaking-up immaterial, provided the soil is properly subsoil-drained; and in these modern days of farming I take this to be the foundation of good husbandry, and my remarks only bear upon land properly drained; the great thing is to provide a deep soil for the fallowing.

The next course ought to consist of a series of laborious operations by which this deeply-broken-up soil can be effectually worked, so that all weeds shall be brought to the surface to be destroyed, while the whole stratum thus brought under operation is kept in an open movable state, and capable of being repeatedly stirred by the effective implements brought to operate upon it. This stirring ought, in dry, hot, sunny weather, to be continuous; on no account should any intermission of this laborious labour take place. It is in this way that the fixed ammonia in the soil is to be released—that the full and free aëration of the soil is to be accomplished. This is to be achieved by patient perseverance in the daily use of drags and scarifiers, whereby the whole of the soil to the very bottom of the stratum broken up for fallowing is powerfully moved and stirred, tumbled about, and mingled as much as possible. The aim should be to present and expose as many surfaces of clods and particles of soil to the chemical action of atmospheric influences as possible. To do this most effectively, and with the greatest certainty, it is very desirable to keep the whole soil in rather a rough state—at all events, it must not be reduced to powder or fine mould. If the whole stratum could be kept in a small cloddy or chequery state, the better, the clods varying in size from a hazel nut to a goose's egg. If, unfortunately, during these tillage operations the soil should become too minutely divided, or nearly reduced to powder, it may be desirable to ridge it by the plough, *i. e.*, give it a sort of trench ploughing, for further exposure to "weathering" influences. Any course will be more advantageous than to permit it to be run together by heavy rains. Occasional slight rains are of incalculable value to the full development of the system I am now advocating—the effective fallowing of a deeply broken-up soil—and that in order to extract from it the rich supply of ammonia it is known to contain, as also to cause it to imbibe all those gaseous influences which the atmosphere has to impart. I believe the result of this deep cultivation will astonish every farmer who will effectually practise it. I wish to be fully understood: it is not the occasional stirring or working the soil at the farmer's convenience that will suffice—it must be always in motion if possible, the more the better in suitable weather; it should not be permitted to lie still beyond a day or two, but if it could be stirred every day the advantage would be correspondingly great. It will be very probably asked, How is this all to be done? I as promptly answer, I cannot tell; but this I know, it ought to be done, and I believe it will ultimately become the general practice—there is no impossibility in it. I will endeavour to show briefly how it may be attempted. Every farmer must curtail his fallow—*i. e.*, fallow a less breadth, and do it better. We must introduce more powerful and more effective implements into our practice, and these must be worked by the gigantic power of steam. Our present appliances and power cannot effect it; our horses cannot effect such deep working as I propose for general adoption. I hail the power of steam for such purpose, and we have only to show that a great and permanent good is to be derived, to insure its introduction throughout the length and breadth of the land. The fact is patent. Steam cultivation is introduced to cultivate the soil. It is for us to show or prove its transcendent advantages in culture by the power and continuity it can bring to bear upon the many difficult operations of tillage and farm practice. The thorough deep working and pulverization of fallows will be one of its great and most beneficial achievements, and to which I now more immediately advert.

Having, as above, shown the uses, design, and mode of effecting a good modern fallow, our next inquiry is, Can the soil be well managed, and good farming proceed profitably, without fallows, as now practised? My answer is, Certainly not, taking *fallowing* in its broadest sense; otherwise, I answer, Yes. I shall attempt to show, and very briefly, that the present prolonged mode of fallowing, and the breadth of land now put under fallow, are altogether disproportionate to the requirements of modern farming. The researches of our agricultural chemists, and the skill of our agricultural mechanics, have created vast improvements in their respective spheres of labour, of which farmers must take due advantage. These improvements can so readily be applied in promoting the culture and enhancing the productive powers of the soil, as to render the present mode of fallowing almost unnecessary. I believe that, if fallowing is generally carried out in the way I have shown above, the application of manures is not of any great moment—that good green and other crops can be produced without it, through the powerful aid of disintegrated ammonia, and the deposit of the gaseous compounds contained in the atmosphere. At all events, a more limited dressing will suffice, and thus leave a portion of the farmyard manure for other especial services, and the replenishing of somewhat-exhausted fields.

Good modern farming mainly depends upon the liberal and judicious application of capital in the management of the land. This is the chief point I aim to establish—a judicious, liberal expenditure in management. Good farming cannot succeed or proceed without it. This judicious application of capital must be the study and theme of every modern farmer; and he must be ready at every fitting moment to apply his knowledge, and the powers of his farm, to effect any course or important process in business that may present itself. For this purpose, the available power of his farm must be greatly increased. No farmer of 200 acres of land must expect to farm without fallows, unless by aid of steam: he must have his steam engine ready to aid in cultivation at all times. This, with less than the usual complement of farm-horses, will, I incline to think, suffice to complete the mode of cultivation I propose to establish as the system of farming without fallows, as at present practised.

The great alteration or innovation which I propose to introduce or bring into more general practice is, the system of partial or bastard fallowing. This, with very few exceptions, can only be accomplished in those seasons when the sun has power and the weather is suitable. For this purpose every preparation should be made on the farm: all other work should be got forward, so as to leave all hands and all steam and horse-power at liberty to proceed with the partial fallow. Those who cultivate for the potato-crop know well that they must prepare their land early in the spring. They provide for the exigency, and it is done. Then, as to the general course of business, all the farm operations must be more speedily effected. The putting in of corn crops must not occupy the whole of every season. The application of more power and more time daily, in the proper season (for, be it remembered, the steam-horse does not tire), will soon complete the sowing of corn crops. At present, this most important part of a farmer's business usually extends over a long and protracted season. I propose to plough or cultivate by steam-power, and harrow and drill in the seed by horse-power; nor would I much abridge the present amount of horse-power on the farm. I believe both powers may be brought into more profitable requisition and employment. In my own occupation, my steam engine does the thrashing which a short time ago was done by my horses; but I do not find that I can spare one horse more from the farm. I am only enabled to cultivate better, and take ready advantage of every passing season or circumstance to enhance the productiveness of my land, by pursuing to some extent the system of partial fallowing I now advocate, and the effecting other matters of business more satisfactorily.

I now come to my other propositions—1st, Will the present mode and design of fallowing be abandoned? 2nd, What order of management, or system of culture, will supersede it? and 3rd, Can green or fallow crops be profitably cultivated and grown without such fallowing?

1st, Will the present mode of fallowing be abandoned? I most emphatically answer that, ultimately, it will. The chief benefits supposed to be gained or derived from fallowing are the cleansing, aëration, comminution (or pulverization), and rest of the soil—all very requisite, except the last, which would be rather injurious than otherwise, as conducive to promote the free growth of weeds, and is by no means necessary to the replenishment of a wearied soil; for, unlike most other things in nature, the more it is worked, tilled, or turned about, the more is it benefited; but the processes of cleansing, aëration, and comminution of the soil are invaluable, and must be constantly proceeded with, and as effectually and perfectly carried out as possible. This, however, need not to occupy the whole summer, or indeed any protracted season, provided means are at hand to accomplish the desired end more speedily. It is not a question of time, but mainly of the *seasonable* application of the required power. I have already attempted to show that, by the general application of more *power*, both draught and mechanical, on every farm, aided by the achievements of chemical labour and science, this amelioration and replenishment of the soil can readily be effected; and what I now aim to establish as the fundamental basis of a new era in agriculture is, the almost unlimited application of mechanical power to the cultivation of the soil, at those precise and particular seasons and conditions of the soil when the various operations can be most effectually and beneficially applied or conducted, taking it as an established axiom that the soil cannot be too freely, deeply, and continuously worked, when in proper order for culture. For this purpose, we require the universal introduction and application of steam-power to cultivation. This is the great desideratum of the present day, in agricultural advancement. I believe its achievements will far transcend any modern improvement yet introduced into the practice of agriculture. We only require the draught-power: the mechanical aids we now possess are sufficiently powerful to cause the profitable abandonment of our present course of fallowing, owing to the facilities thus afforded for reducing the soil into that state of pulverization or comminution so desirable for a fallow crop. But, undoubtedly, vast improvements in mechanical science, as applicable to the soil, will soon be introduced, upon the advent of steam, to promote cultivation, and thus increase our means and ensure our success. We have also this encouragement, in the present day: our farmers are so alive to improvement of any kind, that we have only to show a prospective advantage, to ensure its ready introduction. Every foolish prejudice gives way to cool, calculating judgment: we have only to show that certain courses will produce profitable results, to ensure its adoption.

It has been satisfactorily proved that our poor clay soils are so exceedingly benefited by repeated deep stirrings, as to render them sufficiently fertile to produce excellent crops of wheat without the aid of manure; and that for a series of years, without intermission, under alternate culture. Of what immense advantage, then, must powerful implements, applied by the aid of steam, be to our heavy clay lands, in tearing them up and rending them into piecemeal! To all our light soils, the facilities thus to be provided for the draught of light-land implements, and their continuous working, will be of incalculable advantage. The ready working of these light soils in the autumn, and the cleansing and aëration then perfected, in a suitable season, are like a renewal of their nature. Much stirring and pulverizing in the summer often causes these soils to become so light, that a brisk wind frequently blows large masses away. Good loams, as well as all clays, are surprisingly benefited by autumn culture; and we only await the accession of a competent power, to accomplish all we desire. It is quite certain that, with our present appliances and power, this is impossible. The climate of this country is so variable, and the season is so short, that what is done must be done quickly, and with all our might, or it is past ere we are aware. Therefore, we must have more power applicable to our purpose; and every preparation must be made to take advantage of it and use it. I believe, then, that we merely require such great additional power as the judicious application of steam can confer upon us, to promote the culture of the soil, and at those particular seasons, and under those conditions, when every intelligent farmer's judgment dictates their application to be most advantageous. It is this, and courses like this, which will lead to the abandonment of the present mode and design of fallowing.

2nd, What system of culture, or order of management, will ultimately supersede the present mode of fallowing? I reply: The various courses or systems of partial fallowing commonly called "bastard-fallowing," by which I mean fallowing at all such times and seasons as can be obtained—*i, e.*, the effectual breaking up and working, stirring, and pulverizing the soil whenever, in a suitable season, it can be cleared of its crop, and placed under culture. This is chiefly included in, and is the major part of, the system which Mr. Bond, in his manly address to the Farmers' Club, has so ably set forth, and in such a truly business-like manner. It is this partial fallowing—in the autumn mainly, and at every other convenient time—that is one of the very systems or processes of management that will ultimately supersede fallowing as now practised. Mr. Bond has so clearly and pertinently described the principles it involves, and the courses of management to be pursued, and its great utility, that I freely and fully endorse most of his views, and warmly commend his address to the attention of every practical farmer. I have already said that land is more benefited by culture in the autumn than at any other period of the year. For this purpose, the farmer should make due provision in laying out his courses of cropping. He would do well to have a filed or plot of winter beans, early peas, early oats or barley, early potatoes, or the like, so as to have it cleared for his early operations in the autumn culture, while his main harvest was in progress. The great thing is, to permit immediate action at harvest-day, so that his cultivators or scarifiers are kept in regular work; and we trust shortly to see his *steam-horse*, with all his power and appliances, in effective action, while his cart-horses are securing the harvest. By this early application in culture, many extra crops may be obtained, such as rape or turnips; and the various processes of cleansing, and other preparations for the wheat and future root-crops, are thus admirably conducted; and it is the commencement, as Mr. Bond says, of a "system of continued and continual cleanliness:" besides, what an early and excellent preparation it is for the wheat crop at this season, and the mangel-wurzel and potato crops in the spring, which on the majority of soils require early seeding! This continuous and deep cultivation will also give great facilities and power for a more lengthened and heavier course of cropping. Customary courses will be broken through; and the farmer's judgment will be his rule from time to time. The same attention, and the like course of partial fallowing, ought to prevail throughout the spring, including this "continual cleanliness;" indeed, it will be of no avail under a careless mode of management, or under the slightest inattention to keep clear of weeds. The foundation of the system must be, destruction to weeds; and plough, scarifier, and harrow, and hoe and fork and spade, must be in continual use, to eradicate these pests. At all periods when the land, or any portion of it, is clear of a crop, it ought, in suitable weather and when in proper state, to be put under culture. No time should be lost, under favourable circumstances. In the depth of winter, all clay soils are wonderfully benefited by being laid open to frosty weather. There are innumerable relative advantages derived from this system. One is, the destruction of thousands of insects, grubs, worms, &c., &c. I need not stay to point out how the land is to be cleared for operations at given periods: these would be obvious at the time. In harvest, my own practice is to set the stooks wide apart, and work between; in turnip-feeding, to commence working fold after fold, as fed off. All these minor points are the matters of daily arrangement, and require providing for accordingly.

3rd, Can good green crops be generally grown without fallowing? I shall very briefly answer this question by saying, that if a good autumn tilth is obtained, and the land is then tolerably cleaned, the thing is nearly done; or if in the early spring the season is favourable, there will be no difficulty in the way. The only requisite, so far as management is concerned, is in obtaining a fine tilth for the free growth of the smaller seeds of turnips; but rape will grow luxuriantly in a well-manured soil upon what is commonly called the first furrow, *i. e.*, only once ploughed. Mangel wurzel requires a fine tilth to obtain a good plant. Swedes and turnips love a loose well-pulverized soil, as they grow slowly and sickly; but all this can readily be obtained and provided for, if the required additional power can be brought to bear upon the cultivation. It does not require a summer working to produce a fine tilth—it is power, not time; and in favourable seasons this fine state of the soil may be realized in a few days. Besides this, the adoption of the ridge system for green crops will give every facility for aëration during the summer: the continuous working can proceed as usual till the crop is too forward to permit the operation of horse-hoeing, &c. The all-important auxiliaries of cleanliness and power are the chief requirements; secure and perpetuate these two auxiliaries, and a new era is established. The idea may be somewhat utopian, but it is very certain that British agriculture is fast approaching this most desirable climax. It is constantly done on small holdings, or on a small scale everywhere. Market gardeners never cease to crop, and that most heavily. Farmers may constantly crop their lands, if they can effect the same amount of culture. Steam cultivation is destined to give this power, this impetus; the cultivator has only then to use his best endeavours, and the thing is accomplished. I shall conclude this imperfect paper by again repeating that all must be done with the greatest promptitude and watchfulness: there must be no intermission of effort. Every provision must be made to open a way for the working of the cultivating implements, at whatever time the season may prove favourable; there ought ever to be something ready to work in season, to prepare for the next crop. Uncommon effort and care must be given to eradicate weeds. This constant working will do much—nearly all—that is requisite for this purpose; if not, the fork, hoe, &c., &c., must be brought into requisition. The whole of this system of power, be it borne in mind, must, after all, be based upon truly good thorough-drainage and open leases: no restrictions as to cropping must interfere. Farms must be let upon improvement tenures, by which I mean the farmer shall be bound to improve his holding, or pay for damages. But of this I do not entertain a doubt the unrestricted unlimited expenditure of power in farm cultivation, which I seek to establish, cannot fail to add fertility to every holding; nor can the farmer adopt and practise it unless he receives adequate returns in produce for his extra outlay. The question is one of mutual advantage; the farmer cannot benefit himself alone; his landlord must participate; he cannot farm with profit in this way unless his farm is clean: "it is a system of continual and continued cleanliness."

P. F.

THE RECENT DISCUSSION ON AUTUMNAL CULIVATION.

Well done, Mr. Bond! Whether for matter or style, your paper on "autumnal cultivation," is of rare merit. You are obviously a practical man, thoroughly acquainted with the working details of your subject; and wise alike from the observation you have exercised, as from your familiarity with oral field lore and rural aphorisms—the unwritten "calendars of operations" of our venerated ancestry. You sympathize with the laborious struggles and clogging difficulties of the strong-land farmer: you greatly respect the manager who, combining the virtue of "patience" with the ability of "expedition" in his husbandry, successfully battles against the subtle and pertinacious enemy, couch. But, informed by study of the principles of tillage, of vegetable growth and other branches of theoretic agriculture, and conversant with the many examples of hopeful cultivators who have sought to free themselves from slavery to a creeping-rooted grass, you have had enterprize and courage to act upon this knowledge; to break away from the entangling and repressing precepts of traditionary experience, and discover with satisfaction that heavy land may be kept clean by other means than starving out the intruder with a bare fallow. Then your description of your practice and statement of results is as clear as your argument is demonstrative; for not only is the proposed culture so reasonable and evidently well-adapted to the required object, but you infer and elucidate and fortify each step in the process by a reference to facts and principles in agricultural science. Without wandering from your subject, you also concentrate for us a great deal of the wisdom of modern husbandry respecting the attributes of mangels and swedes under varying conditions of soil and climate: you utter sound and striking remarks upon the feeding of live stock and the application of manures; and you even appeal to the commercial prospects of our agriculture, taking a far-sighted view of the future character of our meat markets, as contrasted with the probable cheapness of a world's grain produce, to urge the improvement of autumn culture in preparing for root-crops. Your paper abounds, too, with forcible and happy expressions—not without an under-current of humour, that occasionally throws out upon the surface of common-sense remark some brisk and beaming wavelet of satire or sarcastic criticism.

On the present occasion we have no wish to sum up the main points of the paper, or of the discussion which followed upon it, but merely to express our approbation while offering one or two remarks in connection with the subject.

Mr. Bond uses Biddell's scarifier to break up the wheat stubble for a few inches in depth without burying the surface weeds; first with the tips or chisel-points, to make an opening in the hard-baked ground and partially tear it to pieces, and then a second time over with the paring-shares or hoes on, so as to thoroughly cut under the entire soil with its imbedded weeds—an operation which the implement could hardly accomplish without the previous course with points only. And he states that it requires the equivalent of three horses per acre for a common day of nine hours to perform the two scarifyings and open furrows between the stetches at eight feet three inches apart. Of course, it was not expedient at the time for members of the Club to pronounce upon the relative merits and demerits of the implements of rival manufacturers; but we wish that some one of the speakers had alluded to the matter, as much of the cost, and consequent advantage or otherwise, depends upon the efficiency of the tool employed. A scarifier is far preferable to a skeleton or skim-plough, not only for the greater regularity and better quality of its work, but because much less manual labour is needed for the same number of horses—an important consideration in harvest. But there is a great difference in the work of even our first-class scarifiers. We have always found the Uley cultivator or Ducie drag as effectual as Biddell's, while Coleman's we should say is superior to either. But we have never seen an implement for the process under consideration so completely what is wanted as Bentall's broadshare; as it keeps so closely to its work, slices and breaks up so accurately in depth and all other respects, and is apparently so economical of power. There is this peculiarity in its form—that the points are set considerably in advance of the shares, so that it accomplishes at once what Mr. Bond does in two separate operations: the tines or points make a way into the hardened soil, and the broadshares then easily follow. On Mr. Bond's land, we should suppose that the power of one horse per acre for a nine hours' day would perform what he requires; but if the ground needed further crumbling, the shares should be removed, additional tines with points attached to make the implement wide, and it might then be worked crosswise with very little power. So that two, instead of three, horses per acre would represent the power demanded for his operations, by substituting this ingenious and admirable new implement for the powerful, and for other purposes perhaps equally useful, Biddell's scarifier.

We were glad to find such unanimity of opinion among the agriculturists present at the Club meeting as to the benefits promised by autumnal culture or preparation of land for fallow. Still, excepting localities where the harvest is early, and the land and system of cropping of a nature admitting tillage-work to be always forward, a very valid excuse for not attempting much autumn-cleaning of wheat stubbles was that the cleaning and preparation of a seed-bed for wheat, harvesting of mangolds, of potatoes, sowing of rye and tares, and the wheat-seeding itself, take up too much time between a late corn-harvest and the advent of unsuitable weather for couch killing and weed burning. Another spur, then, urges us onward in pursuit of steam culture: a great saving in the eradication of couch is promised to farmers of light, loamy, and heavy lands; and on clays we may have abundant roots in place of naked fallow. But all this profit is withheld from our purses until we get the steam-plough in the stubble-field. Mr. Wallis, the chairman, expressed his hope that we may soon possess the steam-cultivator, "by the aid of which the system we are all desirous of carrying out would be much more practicable than it is now." Mr. Bond said, "should we succeed in the economical application of steam to field operations, as appears both probable and immediate, it is in autumn cultivation that such an invaluable adjunct as steam for a motive-power would be of incalculable service." Mr. Pile agreed with the chairman that "for the purpose of carrying out Mr. Bond's object, we must have additional power." Mr. Williams said, "if by means of a simple implement, and a steam-engine driven at a cost of 4s. per day, or of two implements involving a cost of 8s., with five men, a boy, and a horse, they could cultivate 10 or 12 acres per day, which he asserted could be done next autumn—if they could accomplish so much work without the plough, which is not adapted to the purpose, they would steal a march in agriculture. He asserted, as a practical man, that past autumn cultivation bore scarcely any relation to the future; the latter opened up, as it were, an entirely new view to agriculturists. Mr. Smithies hoped that "ere long farmers would be enabled to apply steam to their operations, as the manufacturers applied it to theirs. They were certainly going in the right direction by using steam with scarifiers. He hoped Mr. Williams would take his cultivator to Salisbury: he should certainly purchase one as soon as it was likely to work well, for himself." Mr. Wood said that no one would benefit by steam-power tillage more than he should; and the Chairman concluded by stating that he was "sanguine as Mr. Williams himself in reference to the application of steam-power to field culture. He had no doubt that in a short time they would see the steam-engine as busy in the field as it is now in the stackyard. He was convinced that the greatest benefit that could be conferred on agriculture was the application of steam power to field cultivation." Finally the Club passed a resolution embodying this opinion.

Let Mr. Fowler, Mr. Smith, Mr. Williams, and others take heart. An increased amount of autumn culture will be the first-fruit from the use of their inventions; and they may see in these declarations of business-men that customers will be forthcoming in plenty, directly the condition of economy in expense has been clearly and unmistakeably complied with.

TOP-DRESSINGS—THEIR APPLICATION AND EFFECT.

"Nitrate of soda is the only artificial manure which can safely be used as a top-dressing at any time: the nitrogen, being in the form of nitric acid, is not volatile, as it is when in the form of ammonia. When guano or sulphate of ammonia is used for a top-dressing, it should be sifted very fine, and sown before or during rain." So Mr. Lawes advises us in "Rendle's Directory;" and, undoubtedly, it is sound wisdom to follow his teaching in such a matter. But observe the theory upon which the recommendation, or rather instruction, is founded: it is, that the nitrogen, whether in the acid or alkaline combination, benefits plants through the soil, and that the portion of ammonia which exhales into the air around the stems and leaves of vegetation is wasted. By changing our theory, we get a very different rule for practice. Thus, Professor Buckman, in his "Essay on the Roots of the Wheat-plant," inclines to the use of such top-dressings for wheat as are rich in ammonia, and of such a consistency, or in such a condition, as to be capable of giving off this gas equally and abundantly. And the theory upon which he builds (though cautiously and with due diffidence) is, that the stem and flag of the plant respire ammonia. Hence, one reason why "the surrounding the wheat-plant with ammoniacal manures at the season of its most vigorous growth may be productive of benefit." "While we look over a wheat-field," he says, "on a fine sunny day as summer advances, and see the dazzling dancing in the atmosphere a few feet over the plants, which is caused by the evaporation of water through the cellular system of the leaves, we may know that the crop is pumping up its food from the soil; but as this is just the time for liberating ammonia also from the soil, there is, I think, reason to believe that the atmosphere charged with carbonic acid and ammonia is at this very time being eagerly respired. . . . . Wheat in its *growing history* is completed in a few weeks, although the production of strong plants for growth occupies, in the winter varieties, many months: and it is just as the new growth commences that ammoniacal manures are so beneficial, as the nitrogen therefrom has to be eliminated in a short time; and as the leaves are small and upright, if we suppose ammonia to be respired by them, they will require a quicker and more constant and greater discharge of this gas, commencing too at a certain time, than is the case with a plant with large leaves which grow without any serious interruption from their birth, and whose under-surface is the only inhaling one, and which is so arranged as to insure the due but more gradual and more certain performance of this office without loss."

Let us now turn to other authorities on the subject Mr. Haxton, who gives the following directions for top-dressing wheat: "Guano is more liable to be affected in its results by the weather at the time of sowing, than nitrate of soda; and, indeed, its success depends in a great measure on being well washed into the soil when applied as a top-dressing. Nitrate of soda, on the other hand, is not volatile, and is so easily dissolved that the dew melts it sufficiently for the plants to suck it in both by leaf and root. By mixing the two together, the result, according to the chemical law of catalysis will, in all likelihood, be that the guano is rendered more soluble, while the solubility of the nitrate is in some measure lessened; and even laying aside the operation of the law, the mere affinity of the nitrate for moisture would, of itself, tend also to dissolve any minute particles of the guano in contact with it, and both these pass into the circulation of the plant, even although little or no rain should fall." Guano is adapted for early dressing, and nitrate of soda for later dressing in spring; the former being less soluble, less active to begin with than the latter, and lasting longer in its effect. If it is found necessary to top-dress wheat late in spring, the manure should be as soluble as possible, and the nitrate surpasses all artificials in this property.

Mr. Hannam tells us (in the same Cyclopædia), that in all manures which are designed for application in autumn and winter, the ammonia or nitrogen should be supplied in a form that will as far as possible prevent it operating too quickly: "for example, it would be preferable to supply the nitrogen in union with other organic matter, as in rape-dust, bones, woollen-rags partially decomposed, blood, guano mixed with charcoal and gypsum, &c., rather than in the shape of salts of ammonia, which are so speedily soluble." All winter dressings of artificial manure should be mixed in the soil. All mixtures, in which the ammonia exists in a saline form, should be applied as a spring top-dressing upon the crop, if possible, in wet weather. All mixtures containing organic matter rich in ammonia, as rape-dust or guano, if applied with spring-crops, should be harrowed in immediately; and if applied as a top-dressing, should be used only in wet weather. Spring top-dressings, containing organic matter, should be applied earlier than those purely saline.

These rules are based upon a consideration of the degrees of solubility and lasting or evanescent action of different manures, and also of the requirements of various crops at different stages of their growth: the inference for practice being the same as that arising from a consideration of the volatility of the manures, while accepting the theory that the ammonia or nitrogen feeds plants by their roots.

Yet the practice of applying highly volatile ammoniacal manure upon the surface of land upon which a crop is growing, which may follow as a deduction from the theory that plants inhale ammonia by their leaf and green stem, is not without its share of reasonableness. If the vertical stalks and branching flags of wheat can arrest this gaseous nutriment from the air, it may be worth while to load the atmosphere immediately around them with this useful element, by placing upon the soil, and beneath the overshadowing mass of leafage, substances which will gradually dissipate it into the air. As an illustration, we may take Professor Buckman's allusion to one of the uses of farmyard-manure to the turnip crop: "It is buried in the soil and gradually decomposes, at first slowly, but faster the longer it is exposed to atmospheric and chemical actions, giving its inorganic matters in solution through the roots, whilst ammonia is given off into the atmosphere; indeed, so quickly in some of the warm close days of the early part of September, that every farmer knows when this valuable crop is growing fast by the peculiar odour that he is then aware of, in passing a turnip-field."

Of course, as a general rule, we would advise the farmer to bury his manure in the safe-keeping of his soil, or if applied as a top-dressing, choose cool weather, to obviate waste by evaporation, and showers to wash in the soluble riches; but we are by no means sure that these are the only methods that should be pursued. For some purposes, and in particular stages of the growth of some crops, it may be quite reasonable and profitable to *manure the atmosphere* as well as the soil: that is, to place rather volatile ammoniacal manure underneath the foliage of a crop, as well as mix it into the land. Considerable loss there would evidently be; but when artificial manures are ploughed or harrowed in, there is also a large proportion carried out of reach of the roots of the plants, or locked up in a form useless for their requirements. And it should be borne in mind that the kind of top-dressing referred to is not at all of the prodigal and absurd character of the scheme by which the farmer was to generate immense quantities of carbonic-acid gas and ammonia at his farmstead, dissipating them into the atmosphere, so that the winds highly charged with these invigorating and fertilizing elements might amazingly force-on the vegetation of his farm!

THE NEW FOREST, HANTS.

Sir.—In these comparatively enlightened and improving times, when the arts and sciences have arrived at a climacteric of unsurpassed excellence: when the rude innateness of barbarism has been superseded by the courteous smiles of civilization, it does, indeed, appear somewhat like an anomaly that the legislators of this country should prove so indifferent to the advancement of the most interesting of all subjects that can possibly come under their cognizance and observation. I mean the agricultural interests.

At the distant period when the first Norman aggressor invaded the rights of the people of this country, which were swayed under Saxon rule, his great and, indeed, primary object was to depopulate the territorial districts abutting on the coast immediately opposite his Norman dominions, as a ready means of admitting his followers into the country, without being subjected to resistance or molestation. It was from a spirit, the most selfish and tyrannical in its nature, that the above forest commenced and still continues, after an uninterrupted lapse of seven hundred and seventy-seven years. Independent of the sacrilegious fact of thirty six mother churches having been destroyed, numerous Norman nobles were appointed to hold roydon, or royal lands, in those unchurched and desecrated villages, whilst the poor inhabitants were turned out for 30 miles together, that the New Forest should be established on the most unrighteous and unjustifiable grounds.

Heavy fines and most grievous penalties were rigorously imposed upon many of his servile subjects, who should be detected trespassing upon his game and retirement; and, to sum the matter up in as few words as possible, a smiling, fertile, and prosperous territory was, by the wanton and capricious mandate of a despoiliating monarch, converted into a barren and desolate wilderness.

About five years since an act of Parliament was passed, and shortly afterwards came into operation, to the effect that the forests throughout the kingdom, including that known as the New Forest, the same of Dean in Gloucestershire, and Hainhault, with others of a like character, should be undeered, and the same brought into a state of cultivation. As far as the removing the vert was concerned, the spirit of the act was carried faithfully out to the letter; but in relation to the cultivation of the royal wastes, the less that is said about it, perhaps, the better.

From the last returns of Sweinmote, issued in 1840, it appears that there remained a clear area of waste amounting in extent to 63,540 acres, including the enclosures which are paled round for the growth and preservation of oak, ash, beech, and other timber, for the use of the royal dockyards. Since iron has been found to answer the purposes of elbow-joints in ship-building, the curvi-formed branches of the oak have gone greatly out of use, and on an equitable scale of valuation it has been found that the expenses attendant upon keeping up the establishments of the above forest, are far greater than the returns therefrom can warrant or justify. From a long uninterrupted course of custom, a numerous class of people, termed squatters, have continued from time to time to encroach upon this royal domain. They have succeeded in constituting villages in different parts of the waste, and exist, themselves and their families, in a precarious manner. Many are employed in making charcoal, some in constructing brooms out of the heather, which grows in abundance throughout the forest, whilst the remainder are chiefly occupied in poaching and smuggling. At sundry periods valuable grants of land have been made by the crown to private individuals, who have been owners of estates contiguous to the forest. The Duke of Buccleugh possesses one of these eligible tenures at a hamlet called Beaulieu, situated between Lymington and Hythe. There are some highly cultivated farms upon his manor, which are very productive and remunerating to the farmers who occupy them. There are other similar contingencies near Brockenhurst and Baddesly in the New Forest, which are in a high state of cultivation. This fact tends to denote that the land or soil pertaining to the above royal waste might be readily brought into a state of profitable cultivation, whilst above 50,000 acres now remain, in a condition of perfect waste and unusefulness, occupied by furze, ling, heather, gorse, and wild productions, of little or no use to any one.

There can be not the slightest doubt but that the numerous farms now in existence, which have been thriving progressively for the last one hundred and fifty years[*] and upwards, on the borders of the New Forest, formed originally a part and parcel of the said demesne. I will enumerate a few of these special landed grants which have, from time to time, been abstracted from the forest waste, as it originally stood. First, there is the "roydon," or royal gift of lands in and around Boldre, which, at the time this territorial grant was made, formed a southern portion of the chase. This passed into the hands of Hugo de Quentin, one of the Conqueror's retainers, who levied fines upon the produce of the farms situated within the range of his manorial rights. Next in view came the manor of Lentune, now Lymington, situated on the coast, hard by, which was vested in the exclusive right of one Roger de Yevery, a Norman favourite of the Conqueror. This highly flattered personage was privileged to take toll of all imports landed at the above town from foreign ports; and also all fees, fines, and impositions which were customarily collected in those unprotected times, when the villain and the serfs held their puisne lands and tenements under the mere caprice and tyranny of their exacting lords and masters. Herdle, now Hordel, situated opposite the Needles, on the coast, was allotted to the personage of one Reginald de Clerke; and several other royal grants, adjacent to the foregoing, were assigned by the Norman autocrat to various retainers in his service, who had accompanied or followed him from Normandy.

Now let us pass over these usurparious times, and come nearer to the purpose of the more useful intentions upon which we originally set out. That such royal grants of lands eventually passed away from the hands of the original possessors of them is unquestionable. The same, it is not likely or probable were, when rendered and sanctioned as private property to manorial lords and barons, *reafforested.* They were (the same) titularly assigned either by way of hereditary descendancy, or by deed of gift, or in consideration of exchange or purchase to those who, at the time, represented future generations; and it is by these absolute modes of conveyance that that portion of the New Forest (the owners of which are now independent of the Crown), by a long course of titular descendancy or otherwise, continue to enjoy them. I will, therefore, abstain from interfering or intermeddling with the position of such portions of the original royal demesne, which have become, by virtue of excepted rights, the undeniable property of private individuals, and will confine myself and my observations to the New Forest, as it *still* is, a part and parcel of the royal domain.

The soil throughout this extensive tract of useless territory varies exceedingly. It comprehends clay, marle, gravel, sand, loam, and a great deal of peat is to be met with in the interior, towards Sway. It abounds in bogs and quagmires, and is intersected by numerous rills, which take their rise within its boundaries. Its chief wild vegetable productions consist of many hundreds of acres of holm (or holly), furze, gold-withy, ling, gorse, fern, and mosses. These have seldom or never undergone the operation of cremation, so that they constitute a vast jungle in themselves. No pains are taken to cultivate the Crown lands, as the Commissioners of Woods and Forests hold the notion of waste land cultivation highly objectionable.[*]

Nevertheless, this royal chase has not been passed over as an object unworthy of regard or observation. During the reign of Queen Anne, a proposal was laid before the Lord Treasurer Godolphin by the famous Daniel Defoe, of imperishable memory, for repeopling the New Forest with the Palatines, who, at that period of time, had immigrated into England in great numbers. He proposed to draw a great square line, containing 4,000 acres of land, marking out two large highways through the centre, crossing both ways, so that there should be 1,000 acres in each division. Then, to single out 20 men and their families, who should be recommended as honest, industrious people, and expert in husbandry. To each of these should be parcelled out, in equal distributions, 200 acres of this land, so that the whole 4,000 acres should be divided to the said 20 families. For this, they were to pay no rent, be liable to no taxes; but such as would provide for their own sick and poor, repairing their own roads, &c.; the exemption to continue for 20 years, and then each to pay £50 a year to the Crown. Now, perhaps, two objects would have been answered by this scheme. First—That the annual rent to be received for all those lands, after 20 years, would more than pay the public for their initiatory disbursements. Secondly, it is probable that more money than would have effected this, would have been expended on them here. At any rate, it may be with confidence observed, that the royal forests and chases have ever been considered by every well-informed politico-economist, not only of no real importance to the Crown, but extremely injurious to the public weal.

The first object of a civilized people is to promote agriculture and population by all means, as from these joint natural sources real and permanent strength and riches will be derived. In viewing the aspect of the New Forest in its present state, it must be generally admitted that it might be summarily dispensed with. Look only at the agricultural returns which might be exacted from 60,000 acres annually of "now" waste land in the regulated rotation of crops! Let the cumbrous timber, now standing, be hewn down and sold off for the benefit of the country. Let the warden's appointment be, with the income attached to it, radically abolished; the nine keepers in each bailwick, who have literally nothing to do, be dismissed from their useless offices; the two rangers and the bow bearer (a name without a meaning) who have so long enjoyed the privilege of wood-cutting and feeding cattle; the four borderers, their steward and under-steward, woodward and under-woodward be discharged; and let the fifteen under-foresters or groomkeepers of the fifteen walks, with the twelve regarders, walk about their business. This would be the proper mode of conducting matters. Now for the means of bringing the forest-land into cultivation. Why, sell it off in lots, after it has been judiciously surveyed, to the best bidders, as they are disposing of the waste lands and encumbered estates in Ireland. If the land is put up to auction and should after all fetch *little*, that little will prove better than *nothing*; and in the course of a few years the complexion of this wilderness, as now existing, will be so materially changed for the better, that small farms will be seen rising up and scattered over the face of this worthless waste, contributing to an increase of population, by which means that which is barren will bring forth abundantly, and "the valleys (which are now undrained bogs) shall stand so thick with corn that they shall laugh and sing." Yours obediently, D. G.

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[*] In looking over various title-deeds connected with conveyances of lands made from time to time in the vicinity of the Forest, I have not met with one earlier than the reign of Elizabeth, and that was a conveyance of the manor of Suei (Sway), from one Tyrrell to Purkess. This fact is somewhat striking, as it will be remembered an ancestor, very likely of this Tyrrell, is said to have shot William Rufus with an arrow, near Malwood, in the Forest; whilst a charcoal-burner, of the name of Purkess, conveyed the deceased King in one of his own carts to Winchester. I have repeatedly made inquiries within the last 40 years after the Tyrrell family in these parts, but I believe they are extinct; nevertheless, the Purkess family still continue to reside at a retired spot named Minsted, in the New Forest, which they have occupied before and ever since the death of Rufus, which history would inform us occurred on the 2nd August, 1100, and what is the more remarkable is that the family still pursue the avocation and calling of charcoal burners.

[*] The patronage dependent upon the Crown, in addition to the royal chases, is upon an extensive, and no less expensive scale. The Commissioners of Woods and Forests constitute a very exacting feature in the form of a Government establishment in the country. If this establishment was altogether done away with, it would prove a saving of many thousands a year to the people; and by selling off the forest lands by public sale or private contract, the above incubus would be effectually removed, whilst from its ruins would spring up incalculable benefits to the country at large, which are now emburied in wasteful inutility, to uphold and support one of the most useless sinecures that is parasitical on the integrity and independance of the Crown.

22, *Albany-street*, *Regents-park*, *London*.

THE PRIZE SYSTEM—AS NOW OPPOSED BY THE IMPLEMENT MAKERS.

Nothing can be more unsatisfactory or unprofitable than the present dispute between the leading Implement-makers and our Agricultural Societies. At the first glance, indeed, any such misunderstanding would seem almost inexplicable. If these Societies have tended to do anything, it has been gradually to introduce the best kinds of machinery throughout the country. If there is a class that, above all others, such associations have tended to serve, one would suppose it to be the implement manufacturers. If there is any feature in their proceedings which has been especially successful in its results, experience would prompt us to say it has been their shows of machinery. Whether these meetings have really induced to much novelty or improvement we will not here stay to consider. One thing, however, is certain enough: they have been the means of establishing and disseminating what is proved to be good, to an extent that it would be impossible to have effected by any minor agency.

And yet! all this has been at best but something questionable, it is argued! The system upon which these exhibitions have been conducted is, after all, radically wrong! To give a prize to what the judges have declared to be the best implement of its sort is not fair to the other makers, while at the same time it is only deceiving the public! Scarcely any of these trials, it is maintained, can be relied on! The manufacturers have resorted to all kinds of knowing dodges to get over the judges! The consequence is, that if you want a good, useful implement, it may be just as well to select one that has not taken a prize, as to order one that has taken twenty!

If we understand anything of the argument, it comes to something very like this. The makers, however, have at length—and very properly—put forth their views on the subject in a pamphlet,* written by "A Manufacturer," and "published for the Association of Agricultural Engineers." It is our desire to let this speak very much for itself. The essay opens, then, with a glance at the gradual progress and development of British agriculture, coming on, of course, to that great era in its history, the formation of the Royal Agricultural Society. Let us see what, by their own showing, this has done for the manufacturers:—

"In all cases where permanent depôts for the sale of agricultural machines did not exist previous to the visits of the Royal Agricultural Society of England, their establishment has never failed to follow in its wake; indeed, the trade of dealers, as distinguished from makers of agricultural machinery, may (with one or two exceptions) be said to have been called into existence by the country shows of the Royal Agricultural Society. And among this class (who regularly attend the annual meetings in great numbers) may now be found some of the most competent judges of agricultural machinery. The invaluable results following this concourse of agriculturists and machinists, gathered from all parts of the community, are most evident; and there can be no question that agricultural shows, especially that of the Royal Society, have rendered most essential service to the whole agricultural world. As far, however, as the implement trade is concerned, these exhibitions have generally, and by influences entirely beyond the control of all parties concerned, acquired the character of great agricultural fairs, at which purchasers of machinery meet the manufacturers for the purpose of inspecting inventions and improvements, and of discussing their mutual trade arrangements, rather than that of tribunals for authoritatively fixing the relative merits of competing implements—a character which formerly distinguished them."

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* "The Manufacture of Agricultural Machinery, considered as a Branch of National Industry." Stanford, Charing Cross.

This is certainly very handsomely put, though it strikes us the argument cuts all the other way. If the exhibitions of the Society are descending to be merely "agricultural fairs," should not there be an effort made to make them something more? Is not the Royal Agricultural Society just such an institution as should be "a tribunal of authority"? Let the reader mark what it has done in this way, and then ask why it should not continue to do so?

"In the earlier stages of the great agricultural movement we have witnessed, it was probably advantageous to stimulate and concentrate on agriculture the inventive talent of the country. With this view the promoters of our agricultural societies adopted the plan of offering prizes for the best implements and machinery for the cultivation of the soil. The immediate effect of this system was to single out the best maker of each particular machine, and to spread his name far and wide beyond the limits of the particular district in which his reputation had already been established. At the outset, therefore, the distribution of prizes proved advantageous to those manufacturers whose machines had acquired a marked excellence, as it gave them a status throughout England, which they had previously no means of obtaining beyond a very limited sphere. A prize implement was a new thing in the country, and consequently attracted great attention. It was sought after by the practical and leading minds in agriculture, so that prize machines were very speedily found upon the farms of enterprising agriculturists in most parts of the country."

But we have got beyond this, and the system is now found to be full of defects:—"The hurry and bustle of trials, settling in minutes what could scarcely be settled in days"—"Prizes have lost their significance, and the application of further stimulus would prove injurious."—"We have reached a stage when artificial stimulus is needless and baneful."—"Such a state of progress has been obtained, that machinery may be left to the simple principles which regulate the great business of bargain and sale all the world over."—"By the prize system, the energy of the manufacturer is dissipated in frivolous rivalry."—"He is unnerved by the anxiety consequent upon ceaseless excitement"—"Great expense is entailed upon the manufacturer by these competitive trials, and an extra per-centage to cover such must be paid by the purchaser."—"Prizes in some instances—as with reaping machines—retard the very object they were intended to accomplish."—"This is the only branch of industry subject to artificial stimulus,"—and so on!

It has happened, naturally enough, that, in proceedings embracing so wide a field, and extending over such a length of time as those of the Royal Agricultural Society, a mistake may now and then have been made. It would have been very strange had there not. Assume a man may have won "cleverly" with what his distanced opponent might call a "racer;" or something may have been encouraged as an improvement which was in reality nothing of the kind. Still this "racer," this extra excitement may not all go to the bad. Look at the animal it is named after. He may not perhaps turn out the most useful sort of horse himself; but where should we look for the useful ones without him? The hacks and hunters and others that can do the hard work, all should have a dash of the racer blood in them. And it is in this we see the advantages of the prize system. It keeps everybody right up to the mark, and makes them go the pace with the times, even though it may be at the cost of some little "anxiety and excitement."

The main object of this pamphlet may be very briefly summed up. It is that the judges should publish elaborate reports instead of awarding prizes; but even "the report should not be drawn up in a *competition* spirit, but should be a plain statement of facts." That is to say, the judge should be especially instructed *not* to inform us that A's drill was better than B's, or C's steam-engine preferable to D's. He may not even ascend, like the wine-merchant's list, from "old and dry" to "older and dryer," and "olderer and dryerer" still. Like Touchstone, the public will have to rest content with a "very good answer," though, when they come to examine it, this may be but "so-so."

Honestly, then, we do not think that the "Association of Agricultural Engineers" has made out a case. The prize system has, altogether, worked well. It may have its drawbacks, or require some revision. We believe, however, that day by day shall we have the trials better adjusted; and that it will be but a bad omen for our agricultural societies when their meetings are suffered to sink into the negative importance of agricultural fairs.

MARKET GARDENS AND DEAD FALLOWS.

Sir,—Would it not appear monstrous for a farm labourer, upon the strongest of clay land, to have his garden, or any part of it, a dead fallow? If he had, would he not be considered bordering on insanity? A market gardener, of great eminence, at Fulham, was heard to say, in a railway carriage, a short time back, that if he rented a clay land farm, the first step he should take, if under a North Lincolnshire tenant-right, would be to underdrain the whole of the farm sufficiently. He would have no dead fallows, instead of which he would have two green crops in one year, one of vetches and the second of rape. He would consume half the vetches upon the land with cake and corn, and the other half of the vetches he would mow and get as hay, and consume it in the winter with cattle eating cake and corn; and the rape to be consumed with sheep eating cake and corn. The rape to be eaten off by the first week in November, before the land got too wet. "This is the way I would farm the land under tenant justice, but not without," said the market gardener, who strongly recommended the *Mark Lane Express* to add more science to practice. Samuel Arnsby.

Brigstock, 17th June, 1857.

NORFOLK AGRICULTURAL SOCIETY.

MEETING AT SWAFFHAM.

If unclouded skies, a scorching June sun, and a good attendance are essential elements in the success of an agricultural meeting, the Norfolk Society's gathering on Wednesday, June 24, may be said to have possessed every requisite. The exhibition of the society was this year on such an extensive scale that two large fields were well filled by the stock and implements, although the spacious enclosure called the Cricket Ground, at Norwich, has often presented but a scanty appearance. The trains of the Eastern Counties' Railway brought numbers of visitors from all parts of the county, and although the "specials" run by the company proceeded at a maximum rate of about 12 miles an hour including stoppages, the weather was too hot to be angry. It is, moreover, no use "writing to the papers" about the Eastern Counties' Railway.

The show of cattle was much larger than usual; the principal competition being in Shorthorn bulls and cows, polled cows, and in-calf heifers. Many of the animals were of very superior quality, and the show altogether was considered an advance on last year. The exhibitors of Shorthorn bulls were Mr. N. G. Barthropp, (Suffolk), Mr. James Peto, Lord Walsingham, the rev. W. G. Townley, Mr. W. Stanton, Mr. J. Gamble (2), Mr. W. Goulden, Mr. S. Gooch, Mr. T. Crisp, and Lord Hastings. Mr. S. Gooch (Honingham) received the premium of £7, and Mr. Crisp the second prize of £3. The fine animal shown by Lord Walsingham was highly commended; and No. 6, exhibited by Mr. J. Gamble, was also commended. The Earl of Leicester, Mr. A. Hamond, Mr. J. Overman, and Mr. J. Hudson, exhibited Devon bulls. The Earl of Leicester received the first prize of £7, the second of £3, and the society's silver medal; Mr. J. Overman's stock was highly commended. Polled bulls were shown by Col. Mason (2), Mr. J. Sewell, Lord Sondes, Mr. T. M. Hudson, and Mr. G. D. Badham (Suffolk). The last gentleman received the first premium of £7 and the society's silver medal; Lord Sondes was awarded the second of £3; and No. 18, shown by Col. Mason, was commended. The best bull in the yard was considered to be that shown by Mr. S. Gooch, and the "Swaffham Cup," subscribed for by residents of Swaffham, was awarded to that gentleman. Of Shorthorn cows the exhibitors were Lord Walsingham (2), Mr. W. Rose (2), Mr. D. Gurney, Mr. J. Peto, Mr. S. Gooch (2), and Lady Pigot. Lord Walsingham received the first prize of £5 and the society's silver medal; his Lordship was also awarded the second premium of £3. No. 26, shown by Mr. D. Gurney, and No. 28, shown by Mr. S. Gooch, were highly commended. The cow sent by Lady Pigot (Chippenham, Camb.) arrived too late: had it been entered when the judges made their decision, they would have awarded it the first prize. The competition was languid in Devon cows, the only exhibitors being the Earl of Leicester and Mr. J. Hudson. The noble Lord was awarded the premiums of £5 and £3 given by Mr. Anthony Hamond, and also the society's silver medal. In the class of polled cows, entries were made by Mr. M. Griggs (2), Mr. T. M. Hudson (3), Mr. J. Sewell (2), Lord Sondes (2), and Mr. T. G. Hudson. Mr. T. M. Hudson received the society's premium of £5 and the society's silver medal; and Lord Sondes the second prize of £3. No. 37, shown by Mr. J. G. Hudson, and No. 40, shown by Mr. T. M. Hudson, were highly commended. There were only two Shorthorn in calf heifers exhibited; the competitors being Lord Walsingham and Mr. E. Farrer. Lord Walsingham received the premium of £5 offered by Mr. W. Bagge and the society's silver medal. Mr. Farren's heifer was commended, but the second prize was not awarded. In Devon in-calf heifers the only competitors were the Earl of Leicester and Mr. J. Blomfield, who each exhibited two animals. The Earl of Leicester received the first premium of £5 and the society's silver medal. Nos. 49 and 50 were highly commended. Polled in-calf heifers were shown by Lord Sondes (2), Mr. Kersey Cooper, Mr. E. Farrer, and Mr. G. D. Badham. The last gentleman received the premium of £5 with the society's silver medal; Lord Sondes received the second prize of £3. Fat steers were shown by Mr. E. Farrer (2), the rev. J. Holmes, Mr. J. Smith, and the Earl of Leicester. The noble Lord received the prize of £5 with the society's silver medal, and Mr. J. Smith the second prize. In the class of fat cows or heifers the rev. J. Holmes, Mr. E. Farrer, and Mr. T. M. Hudson, were exhibitors; Mr. Farrer receiving the prize of £4, and No. 64, shown by the rev. J. Holmes, being highly commended. The judges of cattle were Mr. W. Fletcher, Radmanthwaite, Notts; and Mr. J. Slipper, Tottenham, Middlesex.

The show of sheep, particularly of Southdown shearlings and rams and long-woolled rams, was good. The Southdowns constituted a class by themselves, the judges being Mr. Gilbee Eastes, St. Margaret's-at-Cliff, Dovor, and Mr. J. S. Turner, Chyngton Farm, Seaford, Sussex. The judges of long-woolled and half-bred were Mr. W. Sandy, Holme Pierrepoint, Notts; and Mr. R. Woods, Osberton, Notts. The competitors in the class of Southdown shearling rams were Lord Walsingham, Mr. G. Sexton, Mr. J. B. Aylmer, and Lord Sondes. Lord Walsingham received the first prize of £6 and the Society's silver medal; his lordship was also awarded the second prize of £4. Southdowns were exhibited by Mr. H. Overman, Mr. J. B. Aylmer, and Mr. G. Sexton. Mr. Overman enjoyed his usual success, carrying off the premium of £5 offered by Mr. Styleman L'Estrange, and the second prize of £3, offered by the Society, together with their silver medal. Mr. G. Sexton's rams were highly commended. The same gentlemen exhibited southdown shearling ewes. Mr G. Sexton obtained the first prize of £5, and Mr. Overman the second of £2. In Southdown ewe lambs, Mr. J. B. Aylmer carried off both the first and second prizes of £4 and £2, together with the Society's silver medal. The other exhibitors were the Earl of Leicester, Mr. H. Overman, Mr. J. Hudson, Lord Sondes, and Mr. E. A. Applewhaite. In Southdown shearling wethers, Lord Walsingham was the sole exhibitor, and received the Society's silver medal, the premium of £5, offered by himself, and the Society's prize of £2. Southdown wether lambs were shown by Lord Sondes, the Earl of Leicester, and Mr. E. A. Applewhaite. Lord Sondes carried off the Society's silver medal and Sir W. B. Ffolke's premium of £5; the Earl of Leicester obtained the second prize of £2 offered by the Society. In Southdown shearling ewes, Mr. J. Hudson, Lord Walsingham, Mr. H. Overman, the Earl of Leicester, Mr. R. England, and Mr. A. Hamond were exhibitors. The first prize of £5, offered by the Earl of Leicester, and the silver medal of, the Society, were awarded to Mr. Hudson; the second prize of £4, offered by the Society, to the Earl of Leicester; and the third prize of £3 to Lord Walsingham; Mr. H. Overman's ewes were highly commended. In Leicester shearlings there was a good competition, the exhibitors being Mr. Hugh Aylmer, Mr. W. Bennett, Mr. T. Brown, Mr. T. Beale Browne, and Mr. G. M. Sexton. Mr. Hugh Aylmer carried off both the prizes of £6 and £4 offered by the Society, together with their silver medal. The same gentleman was equally successful in Leicester rams, for which he obtained both the premiums of £5 and £3, and the Society's silver medal. The other competitors were Mr. T. Brown, Mr. W. Bennett, Mr. W. Rose, Mr. G. M. Sexton, Mr. T. Beale, and Mr. J. Sewell. The premiums of £5 and £3 offered by the Society for shearling Leicester ewes were also awarded to Mr. Hugh Aylmer, the other competitors being Mr. Beale Browne, and Mr. G. M. Sexton. Wether lambs were shown by Mr. H. Wrightup, Mr. J. L. Barrat, Mr. E. Farrer, the Earl of Leicester, and Mr. T. Wrightup. The Earl of Leicester received the first prize of £5 with the Society's silver medal; and Mr. H. Wrightup the second prize of £2. Shearling wethers of any breed except Southdowns were shown by Mr. T. Barton, the Earl of Leicester, Mr. E. Farrer, Mr. J. Overman, and the Hon. B. N. O. De Grey. The Earl of Leicester received the Society's medal, the first premium of £5, and the second of £2. Ewes of any age or breed, from a flock of not less than five score, and having brought up lambs to within three weeks of the day of exhibition, were shown by Mr. H. Overman, Lord Sondes, Mr. P. J. Sharman, and Mr. W. Back. The premium of £5, offered by Lord Sondes, was awarded to Mr. H. Overman, who was also highly commended. The sheep generally were pronounced to be an advance upon those shown a few years since.

The show of horses was better than usual, although Norfolk takes but a second-rate position in this respect as compared with Suffolk. Cart stallions above three years of age were shown by Mr. G. Wood, Mr. R. Hunt, and Mr. W. Rose. Mr. G. Wood received the first premium of £10 and the society's silver medal, Mr. R. Hunt the second of £5. Three years old cart stallions were exhibited by Mr. W. B. Gill, Mr. H. Overman, jun., and Mr. G. Wood. Mr. Overman received the first prize of £8, and Mr. Gill the second of £4. Two years old cart stallions were shown by Mr. W. Back, Mr. H. K. Tompson, Mr. G. Brereton, and Mr. G. D. Badham. Mr. H. K. Tompson obtained the first prize of £6 and the society's silver medal; Mr. G. D. Badham was awarded the second prize of £3. Stallions for saddle or harness were shown by Mr. J. L. Barrat, Mr. A. Hamond, Mr. C. Girling, Mr. M. Cooper, Mr. W. C. Hill, Mr. R. Elmer, Mr. E. A. Applewhaite, Mr. G. T. Baldwin, Mr. F. Gardner, Lord Hastings, and Mr. W. Andrews. The prize of £7 and the society's silver medal was awarded to Mr. M. Cooper. Hackney mares or geldings above five years old were shown by Mr. W. Rose, Mr. E. P. Middleton, Mr. W. P. Salter, jun., Mr. T. Howe, Mr. S. Abbott, Mr. S. Delf, Mr. F. Barlow, Mr. H. N. Burroughs, Mr. M. Cooper, and Mr. T. Gardner. The last-named gentleman carried off the prize of £10 offered by the Earl of Leicester. Mares and geldings for saddle and harness under five years old were shown by Mr. F. Barlow, Mr. J. Gates, Mr. J. T. Brasnett, and Mr. M. Cooper. The Swaffham premium of £5 offered in this class was awarded to Mr. Gates, and the second prize of £2 offered by the society to Mr. Barlow. Brood mares for saddle or harness were shown by Mr. W. Rose, Mr. F. Gardner, Lord Hastings, Mr. G. T. Baldwin, Mr. A. Hamond, Mr. S. Gooch, Mr. T. Wright, Mr. W. Griggs, Mr. J. Overman, and Mr. M. Cooper. The prize of £5 offered by Mr. J. H. Gurney, M.P., was awarded to Mr. S. Gooch. Cart mares were shown by Mr. T. M. Hudson, Mr. T. Wright, Mr. S. Delf (2), Mr. H. K. Tompson, Mr. S. K. Gayford, Mr. J. Neeve, Mr. G. Eaton, Mr. J. Rivett, Mr. H. Wrightup, Mr. E. Farrer, Mr. H. Overman, Mr. G. Wood, Mr. F. Barlow, Mr. T. M. Hudson, and Mr. T. Crisp. The premium of £5 offered by Mr. G. P. Bentinck, M.P., to which £2 was added by the society, was awarded to Mr. T. Crisp; the second prize of £5 (offered by the society) was awarded to Mr. S. K. Gayford. No. 232, shown by Mr. T. Wright, was commended. Mr. G. D. Badham was the only exhibiter in the class of three years old fillies, and was awarded the society's premium of £6 and silver medal. Two years old cart fillies were exhibited by Mr. F. Barlow, Mr. G. Sexton, the Rev. J. Holmes, Mr. N. G. Barthropp (2), Mr. J. Smith, Mr. J. Peto, Mr. T. Crisp, and Mr. G. D. Badham. Mr. G. Sexton carried off the first prize of £5 and silver medal, and Mr. N. G. Barthropp the second premium of £2. The exhibiters of cart foals were Mr. T. M. Hudson, Mr. T. Wright, Mr. S. Delf, Mr. H. K. Tompson, Mr. T. Crisp, Mr. J. Neeve, Mr. G. Eaton, Mr. J. Rivett, Mr. H. Wrightup, Mr. H. Overman, Mr. G. Wood, Mr. F. Barlow, and Mr. T. Wrightup. Mr. T. Wright received the first prize of £4 and silver medal; Mr. T. M. Hudson the second prize of £2. Mr. N. G. Barthropp carried off Lord Stafford's premium of £5 for the best pony; the other exhibiters being Mr. J. Sewell, Mr. J. Kerrison, Mr. G. Nicholson, Mr. M. Griggs, and Mr. J. Coleman. The competition in the horse department was altogether much more lively than in previous years, and some fine agricultural horses were on the ground. It was remarked, however, that there was still a comparative absence of Norfolk hackneys. Mr. Chas. Blomfield, of Hockwold-cum-Wilton, and Mr. Joseph Maun, of Rockland St. Peter, officiated as judges.

The show of swine was divided into three classes—boars, breeding sows, and store bigs, not more than four months old. The exhibiters in the first class were Mr. J. Sewell, Mr. T. Crisp, the Rev. T. L. Fellowes, Mr. G. M. Sexton, Lord Sondes, and Mr. A. Hamond. Mr. Sexton obtained the first prize of £4, and the society's silver medal; Mr. T. Crisp, the second prize of £2. Breeding sows were shown by Mr. T. Crisp, Lord Sondes, Mr. G. M. Sexton, Mr. H. Overman, jun., Lady Pigot, Mr. W. Rose, Mr. T. M. Hudson, Mr. T. Crisp, and Mr. A. Hamond. Mr. Crisp carried off the first prize of £4, the second of £2, and the society's silver medal. Store pigs were shown by Mr. P. J. Sharman, Mr. T. Crisp, the Rev. T. L. Fellowes, and Mr. J. Sewell. The Rev. T. L. Fellowes was awarded the premium of £3, and the society's silver medal.

There were altogether 298 entries of stock.

The show of implements was considered to be the largest ever seen in the eastern counties, with the exception of the exhibitions at the meetings of the Royal Agricultural Society. The judges (Mr. H. W. Keary, of Holkham, and Mr. Clare Sewell Read, of Barton Bendish,) were engaged for twelve hours on Tuesday, in making their awards. The exhibiters were Messrs. Ransome and Sims, Messrs. Watts and Riches, Mr. W. Stanton, Messrs. Savage and Co., Mr. W. Sawney, Mr. H. B. Caldwell, Mr. C. Burrell, Messrs. R. and J. Rankin, Messrs. Barnard and Bishop, Messrs. E. R. and F. Turner, Messrs. Moore and Clarke, Messrs. Holmes and Sons, Mr. A. Sparke, Messrs. Tuxford and Sons, Mr. Jesse Kemp, Messrs. Turner and Co., Mr. R. Coleman, and Mr. James Woods. Collections of implements were shown by Messrs. Ransome and Sims, Mr. G. H. Bentall, Mr. R. Dyball, Messrs. Creak and Colby, Mr. J. Chapman, Messrs. Garrett and Sons, and Mr. Charles Willett. Some of these firms did not exhibit for premiums, particularly some of the leading makers. There were few implements of a novel character on the grounds. Messrs. Ransomes and Sims received the society's premium of £6, for the best collection of implements, and the second prize for the same was awarded to Mr. Jesse Kemp. The best newly-invented or improved implement was pronounced to be Mr. E. H. Bentall's light land scarifier, and the prize of £5 was awarded to it; Messrs. Holmes and Sons received the second premium of £3, for their manure distributer; and Mr. E. H. Bentall the third prize of £2, for his root pulper. Silver medals were awarded to Messrs. Barnard and Bishop, for their turnip cutter; to Messrs. E. R. and F. Turner, for their roller mill; to Mr. R. Dyball, for his lever horse-hoe; and to Mr. J. Woods, for his self-clearing roller. The following implements were highly commended: — Weighing machine and sack-lifter combined, shown by Mr. W. Sawney; cultivator, shown by Mr. R. Coleman; haymaker by Messrs. Ransomes and Sims; combined thrashing machine, and seven-horse power portable steam-engine, by Mr. C. Burrell; asphalting apparatus, by Mr. J. Woods. The following were commended:—Five-horse power combined thrashing machine, shown by Messrs. Watts and Riches; hydro-thermal churn, by Messrs. Moore and Clarke; circular saw table, and turnip hoe, by Messrs. Holmes and Sons; roller mill, by Messrs. E. R. and F. Turner; horse-hoe, by Messrs. Creak and Colby; galvanized iron barrel water cart, liquid manure pump, and universal mill, by Mr. J. Woods.

The Stewards of the Yards were—Mr. C. Etheridge, Starston; Mr. J. Everitt, Limpenhoe; and Mr. B. Bond, Alburgh.

In the evening about 150 of the members of the society dined together at the Assembly Rooms; Lord Berners in the chair. The noble president was supported right and left by Lord Walsingham, Mr. Wyrley Birch, Mr. Leopold Custance, Mr. H. N. Burroughes, Mr. W. Bagge, Mr. Allan Ransome, Mr. H. B. Caldwell, Mr. A. Hamond, Sir W. Jones, Mr. H. K. Tompson, the Rev. R. Burroughes, Mr. W. Burroughes, the Hon. Mr. Harbord, the Rev. P. Gurdon, and by nearly all the chief visitors and exhibitors at the show.

After the usual loyal, patriotic, and complimentary toasts,

The President proposed "The successful candidates in the cattle class."

Mr. J. Hudson responded for Lord Leicester and Mr. S. Gooch, who, he was glad to find, had won the Swaffham cup. Mr. Gooch had been a very successful cattle-breeder, and he was also a most excellent feeder; and the show held during the day was, he (Mr. Hudson) thought, highly honourable to the county (applause).

The next toast was "The judges of cattle."

Mr. Slipper, in returning thanks, said he remembered when the East Norfolk Society, from which the present association had sprung, held their first meeting at Norwich. He had not had an opportunity of attending again till the present occasion, and he was highly gratified, not only at the number, but the quality of the cattle now shown. Suffolk stood, perhaps, the highest as an agricultural county for cart horses; but if the Norfolk farmers made a persevering effort it would be a severe race, and he did not know that Norfolk would not eventually win. He had seen a great many horses bred by Norfolk farmers, which were equal to many Suffolk ones; but still he believed, upon the whole, the palm must be given Suffolk. Being a Norfolk man himself, he was willing to believe that Norfolk men were not likely to be beaten with a severe struggle. As to the show that day, it was superior to any yet seen in the county. Norfolk hackneys had always stood high, and even at the Royal Agricultural Society's meetings he had never noticed hackneys equal to those he had seen during the day. With regard to polled cattle, being a salesman at Smithfield, he had an opportunity not only of giving his private opinion but also that of the butchers as to the Norfolk breeding, He never had a lot of good Norfolk homebreds but he always found the best customers to buy them (Hear, hear); indeed, he believed that her Majesty was always pleased when she could get hold of a Norfolk homebred (Hear, hear, and a laugh). There had certainly been in the yard some very beautiful animals in the shape of polled homebreds. Mr. Badham's animals, in particular, ought to be spoken of in terms of the highest praise. The Scotch beasts stood extremely high in the market, and he had never seen more beautiful animals than the polled heifer bulls belonging to Mr. Badham. In conclusion, Mr. Slipper observed that he had great pleasure in bearing his testimony to the high quality of the stock shown. (Applause).

"The judges of short-woolled sheep."

Mr. Turner responded. He and his colleague had had some difficulty in making their decisions, but they had acted to the best of their ability. In the class of shearlings they had found some very good animals; the two-year-old sheep were equally good, and they were honestly and fairly shown. A great deal of pains were sometimes taken to make the animals appear what they ought to be, and in some cases where mutton was wanted wool was substituted for it. It would be better if they got good mutton in some cases where they now got only wool. The shearling ewes and ewe lambs, to which first prizes had been awarded, were very good, and, taking the show throughout, he considered, as a Sussex man and a breeder of some thousand sheep yearly, that it was a very good one. He begged, however, to invite the Norfolk farmers to pay a little more attention to the quality of their wool. He was aware moreover that the soil and climate of Norfolk were very detrimental to producing good quality wool, and, when it was obtained, to keep it.

The President thanked Mr. Turner for his remarks, and observed that, as a large breeder of Down sheep, and a successful competitor at other shows, it was a high gratification to him to find that, if he were to exhibit in Norfolk, he should run a very good risk of being beaten. This ought to be a stimulus to every one of them to go on till they gained the greatest perfection in the animals they bred, and produced those which yielded the greatest amount of mutton at the least possible cost. The observations of Mr. Turner showed the advantage and necessity of having a good scientific judge, as a judge must ascertain whether an exhibitor produced good wool where he ought to have produced good mutton. The question had been much discussed at agricultural meetings; and it seemed to be agreed that every man ought to be at liberty to show his animals to the best advantage. The judge ought not, however, to judge by his eye only, but to put his hand on the animals. The noble lord then proposed the health of Lord Walsingham, as one of the successful competitors in sheep, and called upon his lordship "to tell the meeting some of his secrets" (laughter). The President also observed that he saw present his valued friend Mr. Overman, who had done so much for the improvement of sheep; and, as it was good to bring forward young blood, he would call upon Mr. Overman, jun., to respond to the toast also.

Lord Walsingham, in returning thanks, said he had long felt that it was of the greatest importance, if it could possibly be done, that sheep should be actually clipped in the yard, so that a judge might see first of all what the wool was, and afterwards what the sheep were. He was told, however, that this was almost impossible at the Norfolk show, on account of the time at which the meeting took place, as the sheep, if clipped in the yard, would afterwards stand a very bad chance in competition at the general show of the Royal Agricultural Society. He believed it was necessary to have wool short on the back; for, if this was not the case, the mutton could not be felt. It would certainly be unsatisfactory if what were called "points" should be made up by wool; but he was sure judges like Mr. Turner would never be deceived as to an animal being made up, and not having flesh where it ought to have it. As far as his own observation went, he did not discover that there was anything wrong in any of the sheep shown during the day. Altogether, he thought the show did great credit to the county, and that as nice a lot of Southdowns as could have been expected had been brought together.

Mr. Overman, jun, adverted to the proud position his father had occupied at the meeting. It was now more difficult for him to obtain two or three prizes and some commendations than it was five or six years since; and he was delighted to hear from the judge that the animals of those gentlemen who had been successful had been fairly shown. His father had kept the greater portion of his best animals at home, for the Salisbury meeting; and he believed Lord Walsingham had done the same.

Mr. Wood: We have no secrets; we brought our best here.

Mr. Overman: I understood you to say that you had kept two pens of ewes at home.

"The judges of long-woolled and half-bred sheep, and pigs."

No response was made to the toast, as Mr. Woods and Mr. Sanday were not present.

"The successful candidates in the same class."

Mr. H. Aylmer, in reply, stated that his present shearlings were very promising. His letting would take place on the 6th of August, and he should be glad then to see the whole of the present company.

"The judges and successful candidates in the horse class."

Mr. Mann and Mr. Badham responded.

"The judges of implements."

Mr. Keary, in reply, observed that upon the whole he and his colleague were bound to say, that the show of implements had been remarkably good. As 1857 had not been fruitful in new inventions, and they were restricted in awarding the prizes to newly-invented implements, they had felt some difficulty in making their awards. There were many implements exhibited, which did not come into competition, in consequence of the rule which was made in order that the Society might not clash against or reverse the awards of the Royal Society. He thought this was a sound principle to act upon, although it sometimes put the judges in an awkward position. The first prize for the best collection of implements had been awarded to Messrs. Ransome and Co., and they had had some difficulty in awarding the prize. In many other collections there were some remarkably good implements; but there was a good deal of chaff mixed with the wheat, and they were anxious not to award prizes for implements totally useless, as they conceived, for the agriculture of West Norfolk. They had had a still greater difficulty, owing to the season of the year. A most useful implement, a lever horse-hoe, invented by Mr. Dyball, a Norfolk man, on the Holkham estate, could not be put upon trial. The exhibition of large stands of implements which were not allowed to come into competition was rather awkward for the judges. There were several cases at the present meeting, in which implements were exhibited which the judge swere not allowed to notice, and he thought it was questionable whether this practice was desirable, as it might oblige the judges to award prizes to implements which were not thought so good.

Mr. Allan Ransome, in returning thanks for the successful exhibitors of implements, said he was sensible that a large measure of the kindness with which the toast had been received arose from an appreciation of the services which the class he represented had rendered to the agricultural interest. He should not be doing justice to that class, nor should he be accused of over-valuing the benefits they had conferred, if he did not express his belief that the present position of agriculture was owing, in a very great measure, to the development of agricultural mechanics. It could not have escaped the notice of anyone, that although within a comparatively recent period, the general use of the best class of implements for agriculture was very limited; yet, within the last 15 or 20 years, important agricultural implements had come greatly into favour throughout the whole kingdom. This was due no doubt in a great measure to the facilities of transit, and the opportunities of observation afforded by the Royal Agricultura Society; but the agricultural body were also greatly indebted to those who were working in the same profession as himself, for their enterprise in endeavouring, not merely to supply and keep up with, but even to precede the wants of agriculture (applause). This enterprise was, beyond a doubt, thoroughly appreciated at the present time. A friend had told him that when, some 15 or 18 years since, he advocated the use of steam on a Suffolk farm, a gentleman said, that he who would advocate the introduction of steam, was a traitor to the cause of agriculture (laughter). There was no one now, who would not acknowledge that the use of steam, so far from damaging the farmer, had given him the opportunity of reducing his expenditure. Perhaps it was unnecessary to say much of any implements, except those which were of a decidedly novel character, and had recently attained a position among the standard implements of the country. Among these were the reaping machine, and the steam plough, which, he trusted, in process of time would come into use. Before the Great Exhibition, when the first reaping-machine was exhibited, his friend Mr. Garrett had made a proposition to him to send over for a reaping-machine from America; and on consulting on the subject, he and Mr. Garrett agreed that as it was a kind of experiment they should go shares in the risk. The Great Exhibition, however, took place, and with it came a machine which on its first trial was found to be so superior in its original principles to that before adopted, that he and Mr. Garrett at once abandoned theirs for it. His friends, Messrs. Burgess and Key, had taken the machine, and added improvements of their own, and agriculturists were greatly indebted to them for the present state of the implement. With regard to the question of steam ploughing, the implement was not yet in that full state of perfection which it would require years to attain. Various views and schemes had been propounded.

The attention of his own firm had been directed to the sub-twelve or fourteen years since: they had made a costly series of experiments; and looking at the thing in a commercial point of view, although they were perfectly willing to adopt all that might fairly belong to their position, the cost of bringing the implement to perfection had appeared to be far too great. Suggestions had been thrown out in various directions. One proposition was to propel the implement by winding it up by a fixed engine; another was to drag it behind an engine travelling before it. These schemes had been fairly and impartially discussed. Mr. Fowler had worked with the heart of a lion, in endeavouring to carry out that which he believed to be the best plan. Mr. Boydell and those with whom he was associated—among whom was an eminent maker in Norfolk—had been equally active; and there was now a probability that the practicability of steam-power would be fairly and thoroughly tested. The thing was now fairly launched, and he trusted the question was within the reach of solution. There had been a time when all the trials made only led to discouragement, but he hoped now before very long to see a large portion of the country ploughed by steam. He did not advocate the application of steam to agriculture on economical grounds only; but he held it would be especially valuable in securing a class of tillage by means of the great power which could be brought to bear, for which the power of horses was insufficient. He looked upon it as likely to introduce a large system of deeper culture. With reference to Mr. Keary's remarks, he believed the days for the introduction of novelties were, not unwisely, gone by. It would be far wiser and better for the implement-makers to bring into an economical and perfected form the implements now produced, than to seek merely to amuse their customers with novelties. Adverting to some remarks recently made by Mr. Caldwell at another meeting, Mr. Ransome said the implement-makers submitted to the most severe and critical tests at the leading agricultural meetings, and he thought that they ought not to be subjected to similar trials at local shows.

Mr. CALDWELL defended his previously expressed opinions, and urged that as judges and implement-makers were subject to mistakes, fresh trials were necessary, and they ought not to say, " We are so perfect that we want to go no further."

Mr. RANSOME offered an additional prize for hackneys, expressing his surprise that he had not seen more of that useful class of horses at the meeting, and stating his opinion that a premium should be awarded to young, useful, and marketable animals (applause).

LORD WALSINGHAM in complimentary terms proposed " The Health of the President, Lord Berners." The toast was drunk with three times three.

The PRESIDENT expressed his grateful thanks for the warm reception he had experienced among his old friends. With reference to the remarks with which the meeting had been favoured by the judges and others, he trusted breeders would always remember the importance of securing good constitution in their animals, for without constitution they had not the aptitude for fattening, and those qualities which were most profitable to the producer and the consumer. The whole kingdom was greatly indebted to Mr. Ransome and the other implement-makers for the advance they had made in the improvement of implements. With reference to steam cultivation, it would enable the farmer to put the plough into the ground as soon as the crop was severed, and he believed it would eventually be the means of improving the cultivation of the whole kingdom. With respect to the reaping machine, it would, no doubt, be of great benefit on a light soil and sandy surface; but on his own property, which was a cold, retentive clay, the machine was set fast in 4½ feet. He mentioned this fact that it might be a stimulus to the implement-makers to find a remedy for the evil. In conclusion his Lordship said he should consider it a great honour if some of his old and valued friends would come and see what had been done at Keythorpe (applause).

Mr. H. K. TOMPSON proposed the " Royal Agricultural Society," and offered to dedicate the prize which he had received during the day to a premium to be awarded to the gentleman who could exhibit at the next meeting the best heavy-weight hunter, the pedigree to be exhibited.

Mr. ANTHONY HAMOND, who was received with loud cheers, responded to the toast, and said he felt deeply interested in the subject just mentioned by Mr. Tompson (laughter). Hunters must not only have heart with substance, but they must also have blood: blood without a good beast was not worth anything. Mr. Ransome had ably discussed another subject; and a speech that gentleman made some years since at Derby had made a deep impression on him. A noble lord, who was, alas! now no more, took a fancy to make implements; and Mr. Ransome said, at Derby, it was very easy for a lord to become an implement-maker, but it was not so easy for an implement-maker to become a lord; and, with that gallantry which belonged to him, Mr. Ransome added, "I stand by my order." What has been the result since? A rise in the order of implement-makers to a very high rank in the country. To the implement-makers the farmers were indebted for improvements which ten years ago they never anticipated, and for a gentlemanly feeling which was only the result of a superior education. He had been connected with the implement department of the Royal Agricultural Society for four or five consecutive years, and he had never received greater courtesy from any men than the implement-makers. There had that day been produced in the humble town of Swaffham such a show of implements as was not to be seen in the whole aggregate of the kingdom twelve or fifteen years ago. Twelve or fourteen years since he waded up to his neck through rubbish that he could not possibly put a name upon; the difficulty now was to see which was the best. And he believed the advance was to be attributed to the quiet, gentle system of the Royal Agricultural Society. That Society had endeavoured to calm down the excitement for novelty, for it was not novelty that was wanted, but good, sound, practical sense. There were certain men with very vague ideas and very little practical knowledge, who had a great anxiety for notoriety and to push and cram forward new things in a way which no wise man would follow and adopt. The implement-makers had, he was happy to say, the honesty, the integrity, and the stubborness to resist such a course. Attacks had been made upon the Royal Agricultural Society by persons who liked to build up a reputation by a sort of busy-bodyism which did a great deal more harm than good, and was always asking for novelty. Novelty, to a certain extent, was a curse: it led men on to unnecessary expense, and often to error and disappointment, diverting them from that which would have been of permanent and practical good to them. There had been an attempt to draw a line between the practical farmer and the theoretical farmer; but in his opinion the pursuit of farming was a very high one, and he saw no reason why a farmer should not be a gentleman, and why a gentleman should not be a farmer (applause). Was it a disadvantage that a man of education, a man who had devoted many years of his life to the study of elegant literature, should, after his arrival at a certain time of life, turn his attention to the chief of all good—the finding cheap food for the population of the empire? Let them not, then, debase the association by calling out about the difference between theoretical and practical men. What was a practical man but a theoretical man who reduced his theory to practice? In the Royal Agricultural Society there were practical men, and men who knew nothing about the business in regard to which they pretended to know a great deal. So much the better. If there were not such men, how on earth should others have the opportunity of contradicting them (laughter)? Argument brought out truth and valuable facts, and there was nothing more conspicuous in the Royal Agricultural Society than their anxiety to hear sentiments freely expressed; and nothing could exceed the attention paid to a practical man who delivered his opinions. The quality of the animals exhibited during the day was certainly far above the common lot; and he believed some of them would go from the yard and win prizes against all England. To return to the question of practical men, he would ask, who were the great winners at the Royal Agricultural Society's meetings; were they Mr. Snooks, or Mr. Dicks, or Mr. Box? No; they were Lord Walsingham, Lord Berners, and other lords. And how was it that these noblemen beat practical men? By giving to some intelligent men power to spend their money. From the newspapers one would fancy Lord Walsingham and Lord Berners passed the greater part of their time in pulling hairs out of their cows' tails or clipping their sheep (laughter). The principle which had been very much repudiated in Norfolk, with regard to the exhibition of animals, was a very correct one. If he had to get up a young lady for a show, he should put as much bustle on her as she required (laughter). And so it was with sheep: the only difference being that as little "bustle" as possible was taken off them. Gentlemen should be left to bring up their animals as they pleased, and to look the best they could; for the tup-hirer was a fool who was deceived by a little millinery (laughter).

After a few other toasts the company separated.

THE SUFFOLK AGRICULTURAL ASSOCIATION.

MEETING AT IPSWICH.

For the first time since the centralization of Suffolk in one united Society, has the meeting been held in the capital of the county. The Association has so come to test, at a very early period in this its modern history, how far any such change or extension is likely to be for the better. If a greater breadth and width of country would promise to support any gathering, it would be one at the acknowledged head-quarters of the district. There may scarcely, perhaps, as yet have been sufficient opportunity to develop this enlarged scheme, or to count upon all who will hereafter be found susceptible to its influence. Still with all our recollections of what East Suffolk alone has done here, a county show at Ipswich ought to be a good one.

And so it has been. It must be encouraging to the promoters of this amalgamation to see their views so soon and so amply confirmed. Regarded as a general exhibition of stock, this is considered to be one of the best ever held here. Taken, again, for its especial feature, as a show of horses—and that has always been the great strength of the Suffolk meetings—we have no hesitation in recording the present years' as surpassing any previous occasion. In saying thus much, we do not speak of Suffolk horses only. In those for "riding and coaching purposes" the improvement was even yet more remarkable. The entries were much more numerous than heretofore, and the style of horse in many classes proportionately advancing. We will not stay to consider how far this satisfactory result may be attributable to the old blood or the new. The rather let us arrive at once at the consummation wished for. The shows of the whole county are even by this time better than those of East Suffolk alone. In a word, the object aimed at in this alteration is already achieved.

There are few more experienced judges of draught horses than Mr. Spooner of Southampton. Both by his profession and his own innate abilities he stands well qualified for the office he is now so frequently called upon to fill. He was once more summoned upon such a duty to Ipswich; and in that capacity, as one of the judges of Suffolks he was fortunately allowed to say a few words at the dinner. These few were all to the point. He had never before—and he was one of those in authority at Chelmsford—never had he seen such a show of Suffolk horses. He characterized it as an exhibition that no district in the whole world could have equalled. With nothing, too, was he more impressed than the marked improvement in the young stock. The Suffolks, it would seem, are coming not only to be more generally bred, but at the some time more carefully cultivated. There was one rather striking example of this growing superiority. Mr. Badham's three-year-old colt, that took the first prize in his class, also took the second amongst the aged horses. The entry against him in the latter was still very strong. While the judges were debating over their several merits, a countyman assured us there were three or four first prize horses in the ring, winners at the Royal Agricultural Society, as well as at the local meetings. They were, certainly, a magnificent lot to look at; and a Yorkshireman, who stood at our side, confessed he had never seen such a sight before. Still the mares and young stock, as we have already intimated, were the most fancied. There was one three-year-old filly, especially, not sent before the judges when we left her, really a model of strength and symmetry. She had, moreover, a kinder head and better eye than many of the sort can show. Indeed, as we thought, there were many others improving in these hitherto weak places. If, amongst the recommendations of the Suffolk, he had only a little harder colour and more lively look, people would take to him even more readily than they do at present. It is difficult to persuade the uninitiated that the light mealy chesnut is just the best colour of all. With such crests, forehands, legs, and middle-pieces, if a few could only be polished up to dark browns or good bays! We can imagine Mr. Barthropp or Mr. Crisp shuddering at the very idea of such heresy; or old Mr. Catlin rising from his grave to confound such impertinence. Soberly and honestly, we can quite accord with Mr. Spooner's present estimate of this almost unrivalled kind of cart-horse. With the best of tempers, good action, immense power, and proverbial endurance, they must always be hard to beat. To those who still do not know much of them, we can only counsel a visit to one of the Suffolk Meetings. Let them make a note of that at Bury St. Edmund's next summer.

As we have already hinted, the Ipswich horse-show was not one of these horses only. For hunters, hacks, brood-mares, foals, cobs, and ponies, it was alike commendable and attractive. And here we must ask pardon for being, perhaps in the least possible degree, egotistical. For some six or seven years now have we continually urged that classes of riding and driving horses should form part of an agricultural exhibition. It is only right to add that on our first doing so, this was by no means the case. At the same time it is only as fair to say that nowhere has such a proposition been received with such systematic or inexplicable coldness as at the Council table of the Royal Agricultural Society. At last, however, even here has the well-bred horse been acknowledged as worthy of some national recognition and encouragement; while other societies have for some time been getting better friends with him. The East Suffolk has always had a leaning this way; but *as* the East Suffolk with scarcely enough competition. For two or three years, for instance, had the same thorough-bred stallion been unopposed. On this occasion there were three shown, of which the prize horse, Revenge or Recovery, is about as pretty and neat a nag as any one would wish to see. His sire, the old Recovery, was himself taken as a model for the sculptor; but we question whether his son is not even handsomer still. His head is a perfect picture in itself; and had he but a little more substance, Captain Barlow need not fear to show his horse in any company. Another famous specimen of his sort was the roan cob stallion, with a deal of the old Prickwillow character about him; while there was a very full entry of good brood mares, and some as excellent young stock. This, after all, is the test of what we are doing in this way. It only depends on one man or so to provide a stud horse. The point is, to get the county to support him by mares fit to cross with. The proof here was in some very promising foals by Revenge, Haxby, and The Lion. The same sign was given in Devonshire the other day, where but a few years since they had not a horse of any sort worth looking at. It will be seen that Captain Barlow had rather the best of this department, and logically enough. He would appear to go more for blood than his neighbours, and that is just what is wanted all the country through. It is useless attempting any real improvement in our hunters and riding stock without the thorough-bred horse being brought directly into use. And, a man who makes up his mind to have a good one benefits his district almost as much as himself. The novelty here—a great attraction in its way—was a class of hunters, all of which had to face a row of four-feet hurdles before the judges could pass them as eligible for their class. It brought out three very good-looking four-year-olds, of which, however, the chestnut, by Bay President, was unmistakeably the best. The jumping business was amusing enough in its way, though we rather question the necessity or policy of such a proceeding. On very hard ground it is not everybody who would care about having a promising young one rattled over hurdles; and at best the performance does not make him much of a hunter It puts one in mind of the platers they used to show at the cover-side years back, to "qualify" for hunters' stakes.

The show of Suffolk cattle was scarcely up to the mark of what this breed has done; and one of the judges assured us he remembers it within this year or two as much better. Mr. Badham shared with Mr. Hudson, jun., of Castleacre, and Mr. Reed, of Laxfield, the honours of these classes; while Mr. Barthropp and Mr. Crisp had it very much their own way with the shorthorns. Blood here, again, was sure to tell. All the first-prize animals go back to the *Herd Book;* and Mr. Barthropp's prize cows had both high-sounding pedigrees, with the Duke of York and Duke of Oxford strong in them. After the distinct classes for their own native sort "the other breeds" in Suffolk mean the shorthorn; and an amusing instance of the leaning for one or the other was afforded at the dinner. In the course of his telling and suggestive speech, the American, Mr. French, touched on a prize cow he had been shown that morning, but as to the real merits of which he was still in some doubt. "Was it as a good milker she was entered?" he had asked. "Not exactly, perhaps," was the answer. "Or as fit for the butcher, then?" he had next very naturally inquired. "Well, not exactly," was again the explanation. And here, under cover of some laughter, one man whispered to his neighbour, "It's one of Badham's Suffolks he saw." "No, no," rejoined the other, very quickly: "it was one of Barthropp's Shorthorns!"

And the dinner! what shall we say of that without Mr. French's speech? Until you came to the dinner itself, nothing could be better managed. All the heavy business is got through before-hand. The Society gives a whole series of premiums to labourers, well responded to by the latter, and working in every way most satisfactorily. These are distributed, not *after*, as we have seen at some meetings, but most judiciously *before* the dinner takes place. The election of a new secretary, as the successor of the late Mr. Manning Kerr, was also duly proceeded with. From three very good men the choice fell upon Mr. R. Bond, of Kentwell, a gentleman not only *well* known in his own county, but latterly more generally as the author of a paper on autumn cultivation, read before the members of the Central Farmers' Club. With everything thus cleared off, one would have supposed there might have been room for some little edifying and practical talk over an entertainment, well attended and well served. It is seldom, however, that we sat out anything more generally tedious. How every man doled out his allotted pint of wine to the toasts we will not try to calculate. They drank everybody and everything almost, but agriculture. "The Queen," of course *three times three.* "Prince Albert," *three times three.* "Rest of the Royal Family," *three times three.* "The President," *nine times nine.* "The Suffolk Agricultural Society," *nine times nine*—with nothing said about it, and nobody to return thanks for it. "The Bishop and the Clergy," *three times three*—with a reverend gentleman up, who got at last to "The poor of Old England," *nine times nine.* "The Army and Navy," *nine times nine and one cheer more*—and one gallant gentleman to thank us for the Army, and another for the Navy. "The House of Commons, and especially the Members of the Eastern Division of Suffolk"—who did not come, but who providentially sent two other Members to return thanks for them. "The Vice-President," *three times three*—Another honourable gentleman, who had discovered a paper about Kooria Mooria Guano in his place in Parliament, and who delivered an essay on Town Sewage, and what a capital thing it would be for the farmers if they could only get at it! And then at last we did get something worth hearing from Mr. French, which we have reported, and something more from Mr. Spooner, which is also to be read. Mr. Ransome for the Royal Society, conscious, perhaps, that a good deal too much of some sort had been said already, did not do himself justice. "The Mayor and Corporation," *nine times nine;* "Manufactures and Commerce," *nine times nine;* "The Ladies," *nine times nine;* and last of all, the honorary secretary, Mr. Biddell, who deserved the compliment if any one did, and who of course would have been left out altogether, if it had not been for the pluck of one of the judges, Mr. Clayden, who brought the chairman back to his seat to do honour to a man who not only merited it, but who spoke to the point, and told the meeting how the Society was going on.

All this is worse than absurd. If it is to be continued there had really better be no dinner at all. Drink her Majesty, certainly, and loyally—no company of Englishmen would be happy without doing so—and the Army and Navy, and the President. But don't ignore agriculture, or bring it in when everybody is tired out. At these meetings we want to hear the practical men tell us home truths of what they have seen that day, and not to be bored and buttered over with town sewage and stale news about Kooria Mooria; or wearied out by prosy parsons and too-fluent M.P.'s; or swords turned into ploughshares, or the strength of Russia as a fighting country. Suppose, as well as Mr. Spooner, they had up another one or two of the judges—Mr. Torr, for one, to tell us what he thought of the pigs and sheep (of which, by the way, there was a short show, with some very good Downs of Mr. Sexton's); and Mr. Burton, from Yorkshire, to say something about the hacks and hunters. The "successful and unsuccessful exhibitors," again, might improve on the occasion, and in due time, too—not when everybody has been thinking for the last half hour or so that he had better be off. We say not only to the Suffolk, but to many other local societies, cut down your toast-list to one-half its length, and encourage, instead of ignoring, your practical men. People do not—or, at least, we hope they don't—go to these dinners for the empty compliments, and the nine times nine.

In other respects nothing could be better arranged than this Ipswich meeting. The Stewards of the yard and the Secretary have especially to be thanked for their arrangements, and the trouble they took to do everything well. As one great improvement, we may mention the rings into which the horses were brought, class after class, for the judges' inspection. This is in every way preferable to the rambling roundabout circuit their worships have had hitherto to travel.

The Suffolk Society is in one respect even in advance of the times. It offers no prizes nor encouragement of any kind for implements. The chief makers, however, of the district sent the majority of those inventions and improvements they are famous for. Amongst such exhibitors were Messrs. Garrett, Ransome, Howard, Turner, Woods, Whitmore, Page and Girling, Bentall, Sims, Picksby, and Mason.

PRIZE LIST.

AGRICULTURAL HORSES AND COLTS.

JUDGES.—Mr. R. Beard, Bardwell, Ixworth.
Mr. J. Claydon, Littlebury, Saffron Walden.
Mr. W. C. Spooner, Southampton.

CLASS I.—Entire Cart Horses (all Suffolks).

First prize of £10, to Mr. N. G. Barthropp, Cretingham, Suffolk.

Second prize of £5, to the breeder of the best entire cart horse, to Mr. Crisp.

Third prize of £5, to Mr. G. D. Badham, Sparrow's Nest Ipswich.

Highly Commended—Mr. N. G. Barthropp's horse.

Commended—Mr. W. Clarke, Iken, horse.

CLASS II.—Three-year-old Entire Colts.

First prize of £6, to Mr. G. D. Badham.

Second prize of £5, given by Sir E. Kerrison, to Mr. W. Wilson, Baylham Hall.

Third prize of £4, to Mr. S. Wolton, Kesgrave.

Commended—H. Laws, Kirton, colt.

CLASS III.*—Two-year-old Entire Colts.

First prize of £5, given by Mr. R. Garrett, to Mr. Walter Strutt, Groton.

Second prize of £4, to Mr. Joseph Smith, Hasketon.

Third prize of £3, to Mr. G. D. Badham.

Commended—Mr. J. W. Williams, Trimley, colt.

CLASS III.—One-year-old Entire Colts.

First prize of £4, to Mr. J. Everett, Brightwell.

Second prize of £3, to Mr. C. Frost, Wherstead.

Highly commended—Mr. T. Crisp, Butley Abbey, colt.

CLASS IV.—Mares with foals at foot.

First prize of £6, to Mr. S. Wrinch, Great Holland, Essex.

Second prize of £4, to Mr. Moses Crisp, Letheringham.

Commended—Mr. J. Ward, Mersea, Essex, mare.

CLASS V.—Cart foals.

First prize of £6, to Mr. J. Ward, Mersea, Essex.

Second prize of £4, to Mr. S. Wrinch, Great Holland, Essex.

Highly commended—Mr. S. Wolton, Kesgrave, foal.

Commended—Mr. S. Wolton's foal (another).

Class VI.—Gast Mares.

First prize of £6, to Mr. T. Crisp, Butley Abbey.

Second prize of £4, to Mr. T. Crisp.

Highly commended—Mr. N. Welton, Bredfield, mare.

Class VII.—Three-year-old Fillies.

First prize of £6, to Mr. J. Ward, Mersea, Essex.

Second prize of £4, to Mr. G. D. Badham.

Highly commended—Mr. S. Wolton's filly.

Commended—Another of Mr. S. Wolton's fillies.

Class VIII.—Two-year-old Fillies.

First prize of £5, to Mr. S. Wrinch, Great Holland, Essex.

Second prize of £3, to Mr. G. Sexton, Wherstead.

Highly commended—Mr. J. Cockrill, Wantisden, filly.

Commended—Mr. J. C. Alexander, Auberies, Sudbury, filly.

Class IX.—Year-old Fillies.

First prize of £4, to Mr. C. Frost, Wherstead.

Second prize of £3, to Mr. C. Frost.

Highly commended—Mr. C. Frost's filly.

HORSES FOR RIDING AND COACHING PURPOSES.

Judges.—Mr. Burton, Rookwith, Bedale, Yorkshire.
Mr. H. Corbet, Farmers' Club, Bridge-street, Blackfriars.
Mr. W. Weeks, Pimlico.

Class X.—Thorough-bred Entire Horses.

Prize of £6, to Capt. Barlow, Hasketon, for "Revenge."

Class XI.—Entire, but not thorough-bred Horses, for Coaching Purposes.

Prize of £6, to Mr. N. Welton, Bradfield.

Class XII.—Entire Cobs, for Riding Purposes.

Prize of £5, presented by the Duke of Hamilton, to Mr. D. Gowing, Micklefield.

Class XIII.—Cob Mares, with foals at foot.

Prize of £5, to Mr. W. Burch, Campsey Ash.

Commended—Mr. S. Gowner's mare.

Class XIV.—Brood Mares, with foals at foot.

Prize of £6, to Mr. Manfred Biddell, Playford.

Commended—Mr. B. Collins, Hunston; Mr. W. F. Schreiber, Rushmere; Mr. T. Waller, Sutton; and Capt. Barlow's mares.

[The Judges intimated that all the mares competing for this premium would have been commended had not one or two been of a decidedly cart-like character].

Class XV.—Foals, for Riding Purposes.

Prize of £6, to Mr. Manfred Biddell, Playford.

Commended—Mr. C. Schreiber's, Rushmere; and Mr. S. Gonner's foals.

Class XVI.—Foals for Carriage Purposes.

Prize of £6, to Mr. T. Waller, Sutton.

The silver cup, presented by Capt. Barlow, Hasketon, for the best foal by Revenge or Haxby, to Mr. Manfred Biddell.

Class XVII.—Three-year-old Geldings or Fillies.

Prize of £6, to Capt. Barlow, Hasketon (bay gelding).

Class XVIII.—Three-year-old Carriage Geldings or Fillies.

Prize of £6, to Capt. Barlow (bay gelding).

Class XIX.—Two-year-old Riding Geldings or Fillies.

Prize of £5, to Mr. J. Flatt, Tunstall (chesnut filly).

Commended—Mr. G. Rope's entry.

Class XX.—Hackney Mares or Geldings.

First prize of £5, to Capt. Barlow (chesnut gelding).

Second prize of £3, to Capt. Barlow (brown mare).

Class XXI.—Weight-carrying Mares or Geldings (required to leap a 4-ft. hurdle).

Prize of £5, to Mr. W. Burch (chesnut gelding).

Commended—The class generally.

Class XXII.—Ponies.

First prize of £4, to Capt. Barlow.

Second prize of £2, to Mr. N. G. Barthropp.

Commended—Mr. J. Hare, Shotley; Mr. T. Crisp, Butley Abbey; and Mr. J. Cook, Ashfield, ponies.

CATTLE, SHEEP, AND SWINE.

Judges.—Mr. Carpenter, Stratford-on-Avon.
Mr. C. Sturgeon, South Ockenden, Essex.
Mr. W. Torr, Aylesby, Lincolnshire.

Class XXIII.—Suffolk Bulls, under two years old.

First prize of £6, to Mr. G. D. Badham.

Second prize of £3, to Mr. G. Tomline, M.P., Orwell Park.

Class XXIV.—Suffolk Bulls, under two years old.

(No entries).

Class XXV.—Bulls of any other breed, not under two years old.

First prize of £6, to Mr. T. Crisp, Butley Abbey.

Second prize of £3, to Mr. T. Crisp.

Class XXVI.—Bulls, under two years old.

First prize of £4, to Mr. N. G. Barthropp, Cretingham.

Second prize of £2—no entry.

Class XXVII.—Suffolk Cows, in Milk or in Calf.

First prize of £5, to Mr. A. W. Crisp, Chillesford.

Second prize of £3, to Mr. T. M. Hudson.

Class XXVIII.—Three-year-old Suffolk Heifers.

First prize of £4, to Mr. T. S. Hudson, Castleacre, Norfolk.

Second prize of £2, to Mr. A. W. Crisp, Chillesford.

Class XXIX.—Two-year-old Suffolk Heifers.

First prize of £4, to Mr. James Read, Laxfield.

Second prize of 2, to Mr. G. D. Badham.

Class XXX.—Year-old Suffolk Heifers.

First prize of £2, to Mr. James Read, Laxfield.

Second prize of £1, to Mr. G. Tomline, M.P., Orwell Park.

Class XXXI.—Cows of any other breed.

First prize of £5, to Mr. N. G. Barthropp.

Second prize of £3, to Mr. N. G. Barthropp.

Commended—Lady Pigot's cow.

Class XXXII.—Three-year-old Heifers of any other breed.

First prize of £4, to Mr. N. G. Barthropp.

Second prize of £2, to the Rev. R. Moore, Wetheringsett.

Class XXXIII.—Two-year-old Heifers of any other breed.

First prize of £4, to Mr. N. G. Barthropp.

Second prize of £2, to Mr. N. G. Barthropp.

Class XXXIV.—Year-old Heifers of any other breed.

First prize of £2, to Mr. N. G. Barthropp.

Second prize of £1, to the Rev. R. Moore, Wetheringsett.

Class XXXV.—Pure Down Tups of any age.

First prize of £6, to Mr. G. Sexton, Wherstead.

Second prize of £2—no entry.

Class XXXVI.—Shearling Down Tups.

First prize of £6, to Mr. G. Sexton, Wherstead.

Second prize of £2, to ditto.

Class XXXVI.*—Tups of any age of any pure breed.

First prize of £6, to Mr. Hugh Aylmer, West Dereham, Norfolk.

Second prize of £2, to Mr. Hugh Aylmer.

Class XXXVII.—Shearling Tups of any pure breed.

First prize of £6, to Mr. Hugh Aylmer.

Second prize of £2, to Mr. G. M. Sexton, Cockfield.

Class XXXVIII.—Pens of Shearling Pure Down Ewes.

First prize of £5, to Mr. G. Sexton, Wherstead.

Second prize of £2, to Mr. G. Sexton, Wherstead.

Class XXXIX.—Pens of five Shearling Ewes of any pure breed.

First prize of 5, to Mr. Hugh Aylmer.

Second prize of £2, to Mr. Hugh Aylmer.

Class XL.—Boars.

First prize of £4, to Mr. T. Crisp, Butley Abbey.

Second prize of £2, to Mr. G. M. Sexton, Cockfield.

Class XLI.—Sows and Pigs.

First prize of £3, to Mr. T. Crisp, Butley Abbey.

Second prize of £2, to Mr. Wolton, Kesgrave.

Commended—Mr. Wolton's entry.

Class XLII.—Breeding Sows.

First prize of £2, to Mr. T. Crisp.

Second prize of £1, to Mr. T. Crisp.

Class XLIII.—Young Sows.

First prize of £2, to Mr. M. Biddell, Playford,

Second prize of £1, to Mr. M. Biddell.
Commended—Mr. Wolton's sow.

CLASS XLIV.—Fat Oxen or Heifers.
Prize of £4, to Mr. G. D. Badham.

STEWARDS OF THE SHOW.—Mr. H. Biddell, Playford.
Mr. Ellis Gleed, Hoo.
Mr. J. H. Hedge, Ipswich.

THE DINNER,

At which the members of the Society mustered in considerable force, took place in the Corn Exchange. The Earl of Stradbroke, Lord Lieutenant of the county, presided, supported by Sir G. N. Broke, Bart., the Hon. H. F. French (from the United States), the Rev. F. Steward, Mr. F. W. Schreiber, Mr. J. G. Sheppard, Mr. P. Bennett, M.P., Mr. Beckford Bevan, Count Esterhazy, the Rev. C. T. James (Devonshire), the Rev. R. Cobbold, the Rev. F. Schreiber, the Rev. J. White, the Rev. P. Stedman, Mr. J. W. Brooke, the Mayor of Ipswich, and a party of agriculturists numbering between 300 and 400. Sir E. Kerrison, M.P., occupied the vice-chair.

After the usual loyal toasts,

Sir E. KERRISON, M.P., proposed "The Health of the President, Lord Stradbroke;" remarking, in the course of other complimentary expressions, that it was to a great extent through the instrumentality of his lordship that the society occupied its present high position. (The toast was drunk with three times three).

The PRESIDENT, in returning thanks, congratulated the meeting upon the fact that the association was now the largest and most influential local society in the country. He would not offer any suggestion upon agricultural matters beyond the expression of his hope that the time was come when those who occupied small farms would endeavour to make the neatness of their occupations the rule rather than the exception, as had hitherto been the case. (Hear, hear.) In the stock and machinery which they had had an opportunity of observing during the day, they had much cause for satisfaction; and they ought to be grateful to those who had put themselves to the trouble and expense of exhibiting. Every year increased the value of the stock, and produced some new invention in machinery which tended to their advantage. They had the honour of having among them on the present occasion distinguished men from different parts of the world. On his left was the Hon. Mr. French, a vice president of the United States Agricultural Society; and a representative of one of the most distinguished families of Austria was also present. The noble lord, in conclusion, proposed, "Success to the Suffolk Agricultural Society" (applause).

Several other toasts, including "The Bishop and Clergy of the Diocese," "The Army and Navy," and "The County Members," having been proposed and drunk with enthusiasm,

The PRESIDENT, in highly complimentary terms, gave "The Health of Sir E. Kerrison, M.P." (Three times three).

Sir E. KERRISON, M.P.. responded, and said he had been delighted with the exhibition during the day. The show of horses was a much finer one; and it was necessary that this should be the case, for the exhibitions of such societies increased in importance year by year. The exhibition had shown, amongst other things, that when agriculturists had money in their pockets they invariably set about the improvement of their stock and land, although it was said that they would never lay out their money. The British farmers must put their shoulders to the wheel, because many gentlemen from foreign countries had been buying the very best stock in various parts of England. The voluntary system in England would beat a system of state shows in other countries; but, at the same time, as foreigners had taken from Suffolk the very best breed of horses, and from many other districts the best shorthorned stock, they must be expected to be in time strong competitors with Englishmen. In reading the account of the late show in France, he had been struck with the fact that the judges had not only been called upon to deliberate upon the good quality and good points of the animals, but they had also been expected to know by tasting them whether they were good. He had read with surprise that the judges had to taste eight kinds of soup, eight kinds of mutton boiled, eight kinds of meat roasted, &c.; and to do this they must not only be good judges, but also have great gastronomical understandings and monstrous good stomachs. (Laughter.) He thought he might say that agriculture had been most successful during the past year. For his own part, from the clip of one Cotswold sheep—a kind of sheep which he recommended as well suited for the heavy land of the county—he had got as much this year as he received from a lamb, flesh and all, four or five years since. Cattle disease had spread over various parts of the continent, and it was a matter for serious consideration how English farmers could supply at a reasonable price the quantity of meat which was required of them at the present moment. With regard to the supply of manure, Sir Edward urged that it was highly important that the sewage of towns should be made more available for agricultural purposes.

The PRESIDENT gave the healths of the distinguished foreigners who had honoured the meeting with their presence. (Three times three.)

The Hon. H. F. FRENCH said: My Lord and Gentlemen, I must be hard indeed if I could not respond to such a welcome as this. I am called upon to respond to the toast drunk to the strangers present; but were it not for the word uttered by my hon. friend, I should forget that I was a stranger in a strange country. It is true that I have come three thousand miles from my own home, alone, with no excuse of business, and with no object before me but to see the people of Old England—and especially the agricultural people. I have the honour to be a vice-president of the United States Agricultural Society, and the president of the society in the county of Rockingham, in the State of New Hampshire—a similar association to the present one. I have also the honour to be the bearer of a letter of introduction given me by a vote of the United States Agricultural Society, at their annual meeting at Washington, last January, introducing me to agricultural societies abroad, and asking them to give me a cordial welcome. Upon the presentation of that letter to the officers of this Society, I have received a welcome such as I have no doubt you will receive if you should return the visit I have made. I have received, from the time that I first set my foot upon English soil, nothing but kindness at the hands of strangers. The very first gentleman I met, in coming by the train from Liverpool to old Chester, took me by the hand, when he knew me to be an American, and invited me to Lincolnshire; and when I leave Suffolk county I shall proceed on my way to Lincolnshire, to fulfil the invitation. A stranger, gentlemen! I can hardly feel I am one in any respect. I have walked down to Westminster, and read there the inscriptions in honour of your literary men—Chaucer, Milton, Shakspeare, Addison, and a thousand other brilliant stars in literature; and I have felt, my lord and gentlemen, that this was not only English literature but American literature too. Their names are household names in America as much as they are in England, and we do not forget them when we speak of our literature. (Applause.) From Westminster Abbey I went into Westminster Hall, and there I saw the wigs and gowns which we have laid aside as not being practically necessary to the operation of our laws (laughter); but apart from these matters of form—which may be as well laid aside according to our republican notions—there was nothing to make me forget, even in a court of justice, that I was not at home. The English common law is the foundation of our jurisprudence, and we cite now the latest decisions of your courts, not as binding authorities, but as the best expositions of those principles which lie at the very foundation of our administration of justice. I am myself connected with the administration of the law—you know a Yankee generally has three or four different matters in hand—but I say that, even in your courts of justice, if certain ornaments were laid aside, I should hardly know that I was not at home. As to your form of government I have nothing to say. It is probably the best government for Englishmen, although I should be very sorry to say that we have not a much better one for our own country. Probably there is no desire on the part of any of you to give us any other; but, after all, there is a great deal of good sense in the lines of the old poet, although I never could see much poetry in them:

> "For forms of government, let fools contest;
> That which is best administered is best."

There are, however, weighty differences between the habits of the people of the old country and of the new. The expression is a solution of the matter, for one is an old country and the other is a new one. In Old England you have the grand old estates, the grand old parks, the grand old trees, and the grand old landscapes, which nothing but time can make. We have, instead, the primeval forest—trees towering up by hundreds and thousands of acres—a very different thing from the landscapes of England. There is nothing, however, next to the countenances of your people, upon which I so love to dwell as an English landscape. (Applause.) There are those marks of permanence and good living around you which cannot be the work of a day. It takes centuries to grow such a country as England, and no new country can compare with it. Your habits of life are also different. This country, if I may use a homely expression, is like a well-to-do gentleman in middle-life, who has made his fortune, and sat down under his own vine and fig-tree to enjoy himself; while America is like a young stripling, barely out of his time, who has gone out to seek his fortune—full of the spirit of unrest, uneasy, anxious for change, desirous of doing something else besides what his fathers have done, and desirous of trying all sorts of experiments. This is the paramount and marked distinction between this country and our own. This is a conservative country; ours is a country that has no conservatism—I had almost said, if we had the best thing, we should want to try and see if there was not something better. (Laughter.) The Englishman, when he builds a house, lays the foundations deep, and calculates not only for his own time, but for his son, and for his children's children, down to remote posterity. He supposes that they will live upon the same acres, and in the same house; and it is so with us, a man who builds a house goes out west. He buys his land for a dollar and twenty-five cents, or 5s., an acre; for that sum he takes the fee-simple from the government, and buys the land for himself and his heirs for ever. He looks round, with his axe upon his shoulder; he sees the forest, and without thinking about beautiful shades and lines of trees, he considers how he shall get a crop off the land for himself and his children. He lays about, right and left, and makes a clearing. He chops the trees down, if he has time; if he has not time he cuts the bark off, so that they die, and digs-in his Indian corn. Corn means nothing in my country but Indian corn; if we mean anything else, we give it some kind of a Christian name. (Laughter.) Well, he digs-in his Indian corn; the roots don't trouble him; and in ten years' time—if he is a good, smart man, and if fever and ague don't assail him—he gets enough not only to support himself and his family, but also money enough to repay every dollar he paid for his land. This is his house; but he does not stop there. You will think he might be content; but no: a village springs up around him—other people from the east arrive—a school-house and a church are built—more people collect around them, and the village becomes a city. Let me state a fact or two with regard to the city of Chicago. The city of Chicago lays at the bottom of Lake Michigan, and twenty-one years ago it was a wilderness. In 1850 there were 38,600 persons in Chicago; in 1855, when the census was taken, there were 88,000 people in it; and now in 1857, it is thought, if the population were enumerated, that there would be found to be more than 100,000 persons where twenty-one years since there was not a habitable dwelling. The man who went out close to the city of Chicago and planted his wheat-field there, of 100 and 200 acres, now that his land which cost one dollar and 25 cents. is worth £25,000 an acre, does not, of course, cultivate wheat nor grow Indian corn there: he sells out on speculation, and goes west. Chicago is only the beginning of going west—and he starts and founds a city somewhere else. This is not exactly like the stationary, stable system of old England. It is a kind of life which you have no idea of, and yet it is the common life of western settlements. This spirit of unrest, as it may be denominated, has its good and bad sides. Its good points are, that it peoples, civilizes, Christianizes, and enriches the world: its bad points are, that home-influences are not regarded, and are not felt as they are in a more stable and older country. I am afraid, my Lord, that I may be tedious (No, no). Perhaps in our agriculture you would see a wider difference than in any other point. You would see the difference between the old and the new; you would see, in short, the difference between system and no system; for it is just exactly that. The fact is—and I am willing to proclaim it, when I go home, upon the housetops—you understand the business of farming a good deal better than we understand it in our country. We have much to learn of you; and this is my mission, to try and learn something (applause). If a man could buy as good land as the sun ever shone upon for 5s. an acre, you would not expect him to lay out £5 upon an old acre to make it half as good as a new one. But the fact is, that thousands of acres of the lands taken at the Government price of 5s. an acre have been planted 30 years with Indian corn and wheat without the crop perceptibly diminishing. They are bottom-lands, where probably rivers once flowed, and are called river-bottom lands. But even these soils may be exhausted in time. And we have found in New England, where we have been 200 years (a long time for America) that in our old fields the system of taking everything off and putting nothing in begins to fail. We find we must apply manure if we wish to get any crops, and we are looking anxiously round to see whether we can stay there, or whether we must go west and desert the works which we have been two hundred years in rearing. It is by a careful observation, I think, of the agriculture of this country that we must profit more than in any other respect. In passing over your grounds to-day I noticed at every step the difference between the old country and the new. Every one of the implements which I observed here marks this difference. Your implements are of perfect workmanship. I have been in the warehouse of my friend, Mr. Ransome, where many of them are made, and I see there is a great deal of fine workmanship in your implements, and that they are made far more expensively and durably than implements are with us. Why is this? Because you believe that you are perfect in your agriculture. But take your ploughs. Our ploughs are about as much like yours as they are like a spoon. I asked a gentleman what was the weight of one of your ploughs, and he replied 280 lbs. This was a plough for two horses; and a plough in my country, such as we work with three yoke of heavy oxen, equal to six horses, is of such a weight that one workman can walk off with it very comfortably. (Laughter.) I have seen it done hundreds of times; and yet such a plough will not readily break. I do not know how your ploughs may act in your land, but they would be old iron in ours in about five minutes. (Laughter.) It does seem to me that, with regard to agricultural implements, you gentlemen may learn something of America yet. I was glad to see M'Cormick's reaper upon the field. It looked American, and it appeared to indicate that you were looking a little that way, and seeing whether you might not learn something from us. No doubt your implements are better for your own soil, but I doubt whether they are better for ours. I shall go home and report upon these matters, and I am endeavouring to look upon things candidly to ascertain what is best, and what we can carry away that may be useful. We are indebted to you for much. We are importing some of the best stock that we find in the country here. We send our agents, who come and take away the best bulls and sheep and everything else they can find. Plenty of Indian corn will raise a good animal as well as anything else under the sun; and if you will attend the agricultural show of our United States Agricultural Society at Louisville in Kentucky, you will find that we shall show as good shorthorned stock, according to our notions of goodness, as ever you saw upon the earth. There are different ideas as to what constitutes a good cow. I was told this morning that a certain cow was a beautiful one, and I asked, "Does she give a good deal of milk?" The answer was, "Well, I don't know." I asked, "Will her stock give a good deal of milk?" "Well, they may or they may not." Now, I want a cow that will give milk: if she won't give milk she is good for nothing, and I don't care how short her horns are. (Applause.) As I have said, there are some things which you might gain by visiting us. If you were to come over and attend the shows of any of our country societies or United States Society you would see that it is usual for us on all festive occasions to bring the ladies with us. If there were ladies now I should have more freedom in making a speech, for it is more awkward talking to men alone. (Laughter.) I have alluded to many differences which exist between the manners and fashions of the old country and the new; but I think upon one point—and I say it with sincerity—there is no difference of feeling between Americans and Englishmen. Whatever brawling politicians in either country may say—whatever editors of newspapers, who like to make themselves conspicuous, may say to the contrary—I maintain that the people of the United States, taking the rank-and-file of the country throughout, entertain the most friendly feelings towards Great Britain. So far as I have been able to judge from my intercourse with Englishmen, the same friendly feeling appears to pervade the people of Great Britain. The sentiment of the people of both countries seems to be that it would be most unfortunate if anything should occur to disturb the harmony between the two nations; and I cannot close my observations more appropriately than by saying, "The harmony which exists between Great Britain and America—may it be perpetual." (Loud cheers).

"Success to the Royal Agricultural Society of England."

Mr. **Allan Ransome** briefly responded. The Royal Agricultural Society stood in the position of a parent to the local associations, but instead of being begotten by their parent they had been the cause of its production. (Laughter).

The **Secretary** announced that Mr. Bond had been elected Secretary of the Society—128 votes having been recorded for him, while Mr. Beckett had polled 110, and Mr. Cook 38.

Mr. **Badham** having briefly responded for the "Successful Candidates,"

Mr. **Spooner** returned thanks for the toast of "The Judges," which followed. He could not venture to speak as to the various classes in which he had taken no part, because the competition was so great in that peculiar feature of the Suffolk shows—the horses—that he and his brother-judges were fully employed in devoting themselves to their duties. With regard to the show of agricultural horses, it had never been surpassed at any former meeting of the society. One peculiar feature belonging to the show was the excellence of the younger stock. In the distant part of the country from which he came, his friends desired to improve the breed of horses, but they could not, like the farmers of Suffolk, secure a first-rate stallion within half-a-dozen miles. Their poverty, and not their will, consented. It would be inexcusable, however, for Suffolk gentlemen to put a good mare to a bad horse.

"Agriculture, Manufactures, and Commerce."

Mr. **Allan Ransome** shortly responded, observing that the country at present enjoyed an unexampled degree of general prosperity.

The President announced that the meeting of the society would be held next year at Bury St. Edmund's.

Mr. **Claydon**, in complimentary terms, proposed the health of the secretary *pro tem*, Mr. W. Biddell. (Loud cheers).

Mr. **Biddell** responded, and stated that the farmers of the western division of the county were beginning to ask themselves whether they could not compete with their neighbours in East Suffolk. The exhibition during the day had been an extremely successful one. In former years the receipts had not exceeded £120 or £130, but this year 3,360 1s. tickets of admission had been sold.

The company separated shortly after eight o'clock.

SALT FOR SHEEP.—The first thing the shepherd in Spain does when his flocks return from the south, the summer downs, or pastures, is to give them as much salt as they will eat. Every owner allows to each thousand sheep 2,500 lbs. of salt, which they consume in about five months. They eat none in their journeys, nor are they allowed any in winter, as it is thought to produce abortion when given to ewes forward with young. This has been the custom, and it is thought to be the true reason why the Kings of Spain could never raise the price of salt to the height it has maintained in France; for it would tempt the shepherds to stint their sheep, which it is believed would weaken their constitutions and deteriorate their wool. The shepherd places fifty or sixty flat stones at the distance of about five paces apart, strews salt upon each, leads the sheep slowly among them, and every one is allowed to eat it at pleasure. But when they are feeding on limestone lands, they eat no salt; and if they meet with a spot of mixed formation, they are said to partake of it in proportion as the soil is mingled with clay.—*Wool-Grower.*

THE GREAT HUNGARIAN AGRICULTURAL SHOW AT BUDA PESTH.

The show commenced on the 6th of June, and virtually finished on the 11th; but three days more were occupied in the distribution of the prizes, and the sale and disposal of machinery. So strong was the desire to do business, on the part of the Hungarians, that several of the English exhibitors were occupied up to the last hour, either in taking orders or in sending away what they had sold. It was remarked by several of the leading visitors that, had it been known that the English intended to appear in such strong force, and make such an excellent display of implements, a much larger number of the Hungarian cultivators would have been present. The desire is very great, on the part of the latter, to possess themselves of labour-saving machines of the best construction, from the necessity of adopting the most economic means of cultivating the soil, now that the peasant is free, and hand-labour exceedingly scarce and high-priced.

As regards the trials—if such a term may be applied to the several essays that took place of the machines and implements—they were simply remarkable for the deep interest which the Hungarians took in witnessing them. The superiority of the English being duly acknowledged, the only serious consideration involved in the several essays that took place was, the occasional preference given to one English implement over another, both bearing, perhaps, a well-known character of excellence amongst ourselves. As an instance of this feeling, we may adduce the marked predilection for Howards' ploughs—more marked, indeed, than it was at Vienna; and to such an extent was this feeling carried, that the implements were kept working for several days, almost without intermission, and under every possible method of applying them to the land, so determined were the Hungarian cultivators not to take things on trust, and to purchase an implement or machine simply because it might have obtained a high position in the market. This feeling will readily be conceived, when our readers are informed that the Hungarians give large orders for implements, when they thoroughly approve of them, as their estates are very extensive: therefore, a great number are required to properly cultivate them. A landed proprietor, for instance, thinks little of ordering twenty, fifty, or even a hundred ploughs at once; and if his land is in pretty good condition, it is common to find either three or four steam-engines and thrashing machines on the estate, with others in due proportion, to correspond with the necessities of what we call ordinary cultivation.

Similar remarks may be applied to the thrashing machines. The character of that of Clayton and Shuttleworth—of Ransome, Hornsby, and Garrett—is pretty well known by our agriculturists, and, no doubt, justly appreciated, according to the peculiar requirements of each purchaser, or the fancied superiority of one machine over another. This, after all, is a matter which easily adjusts itself with us; but on the Continent practical experience discloses a somewhat different state of things: and, as we have had some few opportunities of judging of these matters, we must say that more discrimination and practical judgment were exhibited at Pest, as regards selection, than we could really have expected, or that we had hitherto witnessed either at Vienna, Paris, or Brussels. The principle upon which the Hungarians generally acted in purchasing and ordering thrashing machines must be acknowledged as sound and true—namely, simplicity of construction and economy of means to produce the best results. For this reason, the machines mostly selected and admired were those of Clayton and Shuttleworth, and Ransome and Sims; and as regards the two, the preference was perhaps in favour of the latter. It was easily observed by the Hungarians that, for simplicity of construction and economy, the rotatory motion must be preferred to what is called the reciprocating motion, in thrashing machines; and as Ransomes have adopted as much as possible the rotatory principle, their machine, on the whole, was considered as having less tendency to shake when at work, and to prove more durable, than those of a different construction. The simplicity of construction, also, of the machine of Clayton and Co., was justly admired; and the attention which those manufacturers uniformly pay to the working parts, did not escape the observation of those who saw it in operation. The machine of Hornsby only arrived, by some mistake, on the last day of the show: nevertheless, it excited considerable interest, not only from its good working powers, but also from its high finish, and from its being constructed upon different principles to those just mentioned. The "screw-delivery," however, in place of the "shogging" boards, has to prove its superiority to the Hungarians; and if there be an economy in its use, they will not be long in finding it out: but wherever complication prevailed in the construction of a machine, though admired perhaps for its ingeniously-working power, it was naturally inferred that repairs must be of frequent occurrence; and, consequently, it did not command so many purchasers as those where simplicity was the leading characteristic.

THE SHOW

Was held in the Köztelek, or what may be termed the showyard of the Hungarian Agricultural Society. The building, of which the yard forms a mere adjunct is rather an imposing structure, and commodiously arranged for its purpose. A handsome staircase of marble steps and gilt-bronzed balustrade, leading to a series of upper rooms, faces you on entering the building, and on the ground floors are arranged the business offices for the president, secretary, and others.

In the yard behind, a series of sheds were constructed for sheep and cattle, which were also appropriated to implements and machines that required a comparatively dry space to be shown in. The principal machinery, however, was exhibited in a large space of ground immediately adjoining the building, and boarded round for the purpose. The great bulk of the oxen were in this space, but they had the advantage of covered sheds, while the implements were exposed to the open air. As the weather during the whole exhibition was remarkably fine, though occasionally excessively hot, there was little inconvenience experienced by the exhibitors from that circumstance. The horses, few in number, were stalled in the yard attached to the Köztelek, the sheep were mostly penned in the same place; while the raw products, the grain, the wines, and the wool were ranged round the upper rooms of the main building. Altogether, the arrangements were excellent, the urbanity of the officials exceedingly marked, and the uniform attention paid to the requests of the English exhibitors extremely flattering.

The opening was characterized by the same quietude as that of Vienna. Archduke Albert, the Governor of Hungary, attended by the leading magnates and prelates, all in state uniform, and accompanied by Counts Andrapy, Karoly, Zichy, Winkheim, Esterhazy, and Nako, besides other notabilities belonging to Hungary, quietly entered the show-yard, and immediately began, in a business-like manner, a tour of inspection—first of the raw products upstairs, next the sheep and horses, then the cattle, and afterwards finished up with the machinery and implements. Being a farmer himself upon a large scale, the Archduke minutely examined each object of importance, especially in the English departments, and made many pertinent and judicious remarks upon the points of practical excellence in the different objects exhibited. His Highness was also a large exhibitor of cattle, grain, and flour, most of which took a high position in each department of production.

The exhibition of English machinery and implements was exceedingly good. We shall simply enumerate the leading exhibitors and objects, as they are all well known and do not call for particular notice at our hands. Clayton and Shuttleworth exhibited thrashing machines and engines; Ransomes, thrashing machines, engine, crushing mills, chaff cutters, ploughs, and harrows; Garrett, thrashing machine, drills, and horse-hoes; Howards, ploughs, harrows, horse-rakes, and horse-hoes; W. Dray and Co., crushing mills, cart, corn dresser, chaff cutters, rakes, and steam-cooking apparatus; Coleman, cultivator; Barrett, Exall, and Co., thrashing machine and engine; Smyth and Son, drills; Davy, Brothers, engine and thrashing machine; Burgess and Key, improved M'Cormick's reaper; and Hornsby and Sons, thrashing machine, drill, and engine.

The jury paid great attention to the several essays (trials) made by the machinery and implements. The thrashing machines all did their work well, the difference between them we have endeavoured to indicate in our preceding remarks. There were two circumstances, however, connected with the trials, which are deserving of special observation, as they stand out so prominently from the general proceedings, and certainly each, in its way, excited a very large amount of interest. The trial of Howard's ploughs was one, to which we have already alluded, therefore we shall not attempt to describe the excitement and interest which they awakened throughout the duration of the show; and the trial of the reapers was the other, which we shall now more specially refer to.

Next to the plough there is certainly no machine or implement that is more required in Hungary than the reaper. The scarcity of labour on the one hand, and the impossibility of gathering in the corn on the other, large quantities of which are annually lost on the plains in the south of Hungary, has imparted an extra interest to the practical powers of the reaper; therefore it may be imagined that the trial, to which we now briefly allude, must have excited great attention and would be watched with the most intense anxiety by the Hungarian proprietors.

The trial took place in a field of rye, about four miles from Pest. So great was the interest excited, that the Archduke Albert and several of the leading functionaries of State attended, to watch the proceedings and report the results. The field, it is almost unnecessary to remark, was crowded by the leading landed proprietors and farmers, who had bought largely of machinery for agricultural purposes, and who paid great attention to the respective operations of the reapers.

There were only three reapers on the ground: one by Baron Ward; a second by M. Szabo, of Pest; and the third, Burgess and Key's Improved M'Cormick. Sometimes the reapers were drawn by oxen, and sometimes by horses, in order to test their working power under different circumstances. M. Szabo's machine very quickly got choked, and had to retire from the field; and we have some recollection of having seen one of similar construction, exhibited by Wray and Son, at Gainsborough, in 1852. The delivery is by endless bands, moving horizontally; but the Pest machine did its work in so clumsy a manner, and required such a heavy draught, that it was at once pronounced a failure. Baron Ward's machine, which we have already described in our notice of the trial at Flinsdorf, did its work very fairly; but, independent of being heavy in draught, and frequently leaping right over the corn, and leaving large patches not cut, but trampled down, requires two men to rake off what it cuts; and such is the severity of labour, that no two men of ordinary strength could last a couple of hours at such work. The Archduke pithily remarked, that it would not be a bad machine if the Baron could only manage to do without his two men. There were four horses required to draw Baron Ward's reaper round the first cut, although the crop was by no means of a heavy kind, and four oxen the second and third; but, after every effort to make it succeed on the part of all who saw it, it came out but middlingly from the trial. The interest, therefore, was naturally concentrated upon Burgess and Key's M'Cormick, and, as it had not worked at the Vienna show, great anxiety was felt as to the results of its operations. It is also just to remark, that great regret was expressed by several gentlemen, who had a deep interest in the question, that W. Dray and Co.'s reaper was not in the field, as it worked so much to the satisfaction of those who saw it at Flinsdorf. It appears, however, that it only arrived one day after the fair, by mistake or by unavoidable delay. Burgess and Key's M'Cormick, it is, however, but just to state, not only came up to what was expected of it, but went far beyond that point. After making one round with a couple of horses only (the horses are light in Hungary), the approval of its working capacity was so marked, that there was not even the shadow of a doubt in any one mind in the field, as to its marked superiority over the others, and of its apparently answering the various requirements of such a machine in Hungary. This reaper did its work clean, easy, and in comparatively quick time, besides requiring much less draught, not so many men to attend it, and doing no injury to the corn. The Archduke, after seeing the reaper tried, first by horses and then by oxen, and quietly following it along the field, congratulated the representative of Burgess and Key, and emphatically remarked, that it was immeasurably the best machine there, and that it fully answered all the requirements that he could conceive of such an implement. On this declaration the whole company took off their hats and gave a hearty cheer, at being honoured by English machinery in assisting them in their field work. The success of this machine, as far as Hungary is concerned, was certainly of a very decided character.

We subjoin a list of those who have received the diploma, and the specified reasons why it was awarded; and as we received this document direct from the Secretary of the Hungarian Society, every reliance may be placed in its authenticity and accuracy.

Honorary Diploma awarded to English Exhibitors at the Hungarian Agricultural Show held at Pesth, June 6-11, 1857.

The undersigned judges of the Agricultural Exhibition, held at Pesth, the 6-11th of June, 1857, in the 'Köztelek' (show yard) of the Hungarian Agricultural Society, in presence of His Imperial and Royal Highness the Archduke Albert, Governor of Hungary, and of several thousand agriculturists, do acknowledge and declare, that they have unanimously awarded the first documental acknowledgment to —— implement makers in England, for their excellent ——, and in remembrance of this Agricultural Society.—Pesth, June 11, 1857,

Count Georg. Andrassr, President of the United Jury.
Stephen Morock, Secretary.

Judges: Charles Gulácsy Aloy Vay, Baron Anton Balassa, Baron Anton Aorhy, Constantin Pyiokó, Edward Egan, Franciscus Iunfield, Marsin Pobjak, Vincing Jaukó.

List of English Exhibitors who have received the Honorary Diploma, alphabetically arranged:—

Messrs. Barratt, Exall, and Co., engines for horse-power.
,, Burgess and Key, reaping machine.
,, Clayton and Shuttleworth, excellent thrashing machine.
,, Coleman and Co, best cultivator.
,, Davy, Brothers, and Co., perfectly working thrashing machine.
,, Dray and Co., cooking apparatus, and general excellence of machinery.
,, Garrett and Sons, number of interesting articles, especially their perfect thrashing machine.
,, Hornsby and Sons, drill, and steam thrashing machine.
,, Howard, J. and F., ploughs, which at the trials proved to be most excellent.
,, Ransomes and Sims, interesting articles exhibited, especially for their excellent thrashing machine.
,, Smyth and Sons, drills.

The live stock was not so varied and numerous as that of the Vienna Show, but as far as it went it was singularly diversified in character, and more marked in its peculiarities than might have been expected. The cattle were evidently the choicest of their kind, and the several points for which they are distinguished were more strikingly developed than what we had an opportunity of observing at Vienna. The flower of the Hungarian breed were certainly to be seen at Pesth in considerable numbers: the long and branching horns, the dark and expressive eye, fringed with black hairs to protect it against its numerous enemies; the large but well-knit frame; the nearly white colour of the body, shaded up at most of the salient points with thin lines of black; and its agile movements—were all brought out, in the specimens at the show, to their highest perfection. This fine race of cattle are mostly bred on the plains of Lower Hungary, where they have a comparatively free range, and feed at will upon the rudest productions of nature.

The Csaky race, so well known in Hungary, has been mainly produced by breeding in-and-in; and if others would follow the same plan as Count Csaky (who imitated our Bakewell, as regards his sheep), in the different parts of Europe, in the rearing of stock, the several races of cattle might be greatly improved, both as regards flesh and milking purposes. The mania for crossing, however, like most other manias, has been carried to a ridiculous extent in Hungary and Austria, especially in the rearing of cattle and horses; and the result, in a majority of instances, is a hybrid race of animals, whose qualities and functions are everlastingly at cross-purposes; and whose utility, either for food, or for work, or for both, is therefore greatly impaired.

As the Hungarian oxen are principally reared for draught, greater care is taken to select specimens for strength than for other purposes; indeed this is the only point considered of any importance in the breed, as the animal has to do ordinarily its five years round of work before it is told off for feeding, which is quite subordinate to its working properties. The quality of meat, therefore, is but little studied in the stock-yards of Hungary, and milk meets with but little better attention.

Some of the animals exhibited measured as much as 7 feet round the chest, and 4 feet 8 inches along the back; and as bone is considered a leading point in their condition, their weight may be readily imagined. The finest bull in the yard weighed from 120 to 160 stones of 8 lbs., and his companion, a well-shaped cow, weighed from 90 to 130 stones. The oxen of the same breed weighed from 100 to 160 and 180 stones. All the animals were as well shaped as they possibly could be, the peculiar conditions under which they were bred being considered. There were but few Tyrolese, but they were excellent of their kind. The Marzthaller and the various Bohemian and Moravian breeds were but slightly represented, and scarcely any one of the pure race, the majority being a cross, which, in one or two instances, presented a good and generous kind of beast. The most distinguished feature, however, in the cattle department, apart from the Hungarian, was the contribution of the Archduke Albert, the Governor of Hungary. This consisted of five beasts—a cross of the pure black-and-white Dutch and the Marzthalle race, the former greatly predominating. The bull, five years old, was of an enormous size; but not what we should term so fine in his points as a first-class animal ought to be. The rump was slightly elevated, the back was not quite straight, and the loin and hips, though thickly covered with flesh, were too narrow to be in just proportion to other parts of its body. Upon the whole, however, the breed is excellent, and appears remarkably gentle and generous in its nature, and a great deal more fitted for feeding purposes than any race we have yet seen in the Austrian dominions.

The horses were not numerous, either in quantity or in character, being mostly the production of Hungarian peasants, who follow the same rule in breeding horses as gipsies mostly do in breeding donkeys: they leave them to grow up how they can. The same characteristics of the majority of Hungarian horses—too light in the leg, too narrow in the chest, too weak and lanky in the loins, and too cow-houghed to have much pretension to beauty of form, or strength of limb. Yet, some of these horses are remarkably hardy, will endure much, and go long distances, without being eased even of their harness. The most hardy of all that we have met with, are what may be termed the pony race; they measure from 11 to 13 hands high.

The exhibition of sheep was as numerous and quite as excellent as that of Vienna. The great bulk were of the Merino breed, and some few of the pure Rambouillet, which make an excellent cross with that breed, especially for improving the quality of the wool. We have already remarked that sheep in Hungary are mostly reared for their wool, and that their flesh is of very little account, except amongst the very humblest classes of the people, who, by-the-bye, have not many chances of tasting it, except from the few animals that occasionally die from dizziness or from old age. The sheep are ordinarily kept as long as they will yield a fleece; and when they have lost that faculty, they are immediately consigned to the slaughter-house, and become, as it were, a species of tabooed, or refuse food.

The variety of corn, seed, roots, and wood was very singular; and, judging from the qualities of many of the specimens, there can be little doubt that agriculture in Hungary is capable of much greater things than it has yet exhibited, or than the greater portion of Europe could exhibit, even when under a much superior kind of management.

After wheat—which in many instances was very fine, being thin-skinned and full of flour—the maize and the beet are largely cultivated, not to omit, however, one or two fine samples of barley.

At the close of the Exhibition the Hungarian Committee invited the English exhibitors to a kind of *petit souper*, in order that they might have an opportunity of tasting the pure Hungarian wines, and witnessing the warmth of Hungarian feeling. After supper the usual loyal toasts were proposed and reciprocated, the Emperor Francis and the Queen Victoria being duly honoured by the company. The reception given by the Hungarians to the English was really hearty and truly welcome, and, as such, was responded to by the latter.

CULTIVATION OF WASTE LANDS.

BY CECIL.

A very interesting subject was recently discussed by the members of the Central Farmers' Club, which leads to more expansive views, and the consideration of other important features connected not only with the object then introduced, namely, "The best means of improving the cultivation of poor and hilly lands," but also the "Cultivation of waste lands."

There is a vast number of well-meaning philanthropists whose zeal on behalf of their fellow-men carries them by flights of romantic fancies into regions unsuitable to the cultivation of earthly productions, and whose notions of agrarian felicity are purely chimerical. When it is announced that there are 20,000,000 acres of land in England and Wales, which are not cultivated, it is necessary to inquire where they are situated? or upon what authority such an estimate is formed. From the best information obtainable at the time, and supplied to me by a gentleman connected with the Board of Trade, it was estimated in the year 1847 that the quantity of uncultivated land in England amounted to 3,454,000 acres, in Wales to 530,000 acres, and in the whole of the United Kingdom to 14,700,000 acres. Confining these remarks to England and Wales, the quantity, in round numbers, assimilates with the proportion spoken of by Mr. Sidney at the meeting, already referred to, of the Central Farmers' Club. The fallacies of Mr. Ernest Jones's proposal, at a meeting held in Smithfield, to cultivate waste land by the agency of supernumerary mechanics, were so clearly expounded by Mr. Sidney as to render it quite unnecessary to offer any further illustration on that point. Questions, however, emanate from these subjects. Is there really any considerable quantity of uncultivated land capable of profitable cultivation? If so, what is the most practicable means of attaining that object? not merely with reference to the best system of management, but with respect to the capital essential to carry out the project. That there is a quantity of land of a character capable of profitable cultivation there cannot be a doubt. There is a considerable portion in South Wales, for example, especially parts of Glamorganshire, Breconshire, Carmarthenshire, and Cardiganshire. It is well-known that in those counties there are mountainous tracts, which, from their altitude and the components of the soil, are unsuitable to the growth of grain or roots; yet there are, even among these, spots well adapted to supply sheep with summer food; indeed they are at present, to a limited extent, used for that purpose, and they are capable of great improvement. There are also considerable districts which only require judicious management and adequate capital, to render them very advantageously productive both of cereals and roots. More than this, there are still greater portions partially but miserably cultivated, and that arising from two unimpeachable causes—want of capital, and want of enterprise and judgment. Here the operation of draining may be carried out with the greatest benefit.

The problem hence arises, how is the necessary capital to be obtained? To suppose that uncultivated lands are likely to be reclaimed to any appreciable extent by private individuals is not consistent with probability. Very few farmers are disposed to encounter such undertakings upon an extensive scale, and the only way waste land is brought into cultivation by them is by annexing portions to adjoining farms; but this is usually beset with many impediments: occupiers of farms in the vicinity of uncultivated wastes have seldom more capital than they require to conduct their original holdings, and the attempt to embark in such enterprises without ample means can never be attended with success. I have known several instances where common lands have been enclosed and allotted to the adjacent farms, the occupiers of which have crippled themselves seriously, by withdrawing part of their capital from the cultivation of their original tenancies, and have therefore not been able to do justice to either. I also know instances where the portions of land so allotted have simply been enclosed by fences, yet the land is to this day left in its primitive condition, producing nothing beyond scanty fare for sheep, or perhaps a few young cattle, although the soil is capable of great improvement.

To bring waste land into cultivation through any system by which the mechanic or farm-labourer can be made the operator, upon his own resources, is a perfect fallacy. Much has been written and urged with the best intentions concerning the condition of the English agricultural labourers. That their position is capable of and demanding great improvement there cannot be a question. The condition of the small farmers in Wales is quite as much, and in some respects more, an object for consideration. Their education is quite as imperfect, their habits of life harder, their deprivations greater, their returns more precarious. Take, as an example, a young married man occupying a little farm of badly-cultivated land, the extent of which may be fifty or sixty acres, his capital as many pounds. According to the prevailing custom of the country he is enabled to purchase at sales by auction a portion of his stock of cattle, sheep, or horses on credit. This is considered by him, being a bad financier, a boon ; but it is his greatest enemy. For this credit he has to pay a great per-centage, inasmuch that it occasions great competition, and he bids far beyond the intrinsic value of the lot ; and it often happens that stock so purchased is sold to meet the payment, after six months' keep, for very little more, and sometimes for less, than it actually cost him. As to cultivating his farm so that it will produce anything equivalent to the quantity it is capable of producing, that is quite out of the question. He grows a few acres of wheat at the rate of ten or twelve bushels per acre, nearly the whole of which is consumed by his family. Oats and barley are cultivated without producing adequate returns. His potato crop is simply a provision for his household. A small quantity of butter finds its way to market ; the butter-milk is his principal beverage—" cwrw da" is to him a phantom. A few sheep find their way to market, also the oats and barley : in course of time perhaps a two or three-years-old pony, and a few heifers which he has contrived to keep alive, but in miserable condition, are all condemned to make up the rent. Subsisting upon the hardest fare, he tills the land himself, probably assisted by wife (who works in the field), his sons, or younger brothers. He cannot afford to purchase the implements necessary for his use ; and even if he could, on so small an occupation, the cost of many which are necessary to successful husbandry would be greater than the profits of his little farm would reimburse. The purchase of artificial fertilizers is an item which his exchequer cannot tolerate. Dependent solely upon his own resources for manures which are never manufactured to the best advantage, his land is very inadequately supplied. These are not fictitious exaggerations : they are facts well-known to all those who are conversant with their present state. Providing the visionary phantoms of those who advocate small farms as the means of improving the condition of mechanics and labourers could be realized, it would be highly gratifying to trace the honest young labourer and his industrious wife from servitude to a small farm, rising by degrees to the position of the worthy farmer, supporting his family as becomes their station ; but, as a principle, the system will not harmonize with reality, ostensibly from want of capital, and the impracticability of cultivating such small farmson advantageous terms—an obstacle which must increase with the customs and improvements of modern days. This is an era of progress. In every undertaking worthy of notice, "Forward !" is the cry. The improvement of waste lands has been a service of somewhat tedious adventure. It appears that during the lengthened period of 140 years 8,000,000 acres of land have been brought into cultivation, and it is natural to conclude that this quantity comprises generally the most favourable portion. Upon this calculation, assuming 4,000,000 acres to represent the quantity in England and Wales capable of cultivation, it will at a similar rate occupy 70 years more to bring about that desirable object. But it is wanted more speedily. We want extended opportunities for growing corn, and most essentially for raising stock : the high prices proclaim this, together with the gradually decreasing supplies as compared with the demand.

Civilization is also intimately connected with the cultivation of the soil. It may be almost invariably remarked that in those districts where the soil is deficient in cultivation, the inhabitants partake in equal ratio with the rude and uncultivated condition of their native land.

Companies have been formed for most speculations wherein considerable sums of money are capable of being profitably invested, but not one company has ever been established for the purpose of farming. This may be opposed on the principle of monopoly ; but I contend that it could not bear such a construction if properly carried into effect. It would not be with an object to secure the profits of a specific trade : quite the reverse. It would be for the purpose of improving the cultivation of land more effectually than it can be accomplished by individual enterprise, and by so doing supplying the wants of the community. The object of agricultural companies would be for the purpose of cultivating lands at present uncultivated, and lands which are badly, or as it may be termed only partially cultivated, and which latter does not produce one-fourth, perchance in some cases one-sixth of what it may be made to produce. By extensive improvements of this nature the advantages would be diffused, not only in the immediate neighbourhood, but throughout the kingdom. For these purposes companies would combine many very important features. The very best systems of agriculture would necessarily be adopted ; and in the event of badly-cultivated small farms being included in the undertaking, the unsuccessful occupants of those farms would be eligible for employment in various departments suited to their respective abilities. They would not, in fact, under those circumstances, be expelled from their homes, to which they might be united by any associations of olden times ; and with fixed salaries under the employment of a company they would be in a far more prosperous condition than toiling on their own account with precarious profits. Their children likewise would be capable of fulfilling the lighter occupations ; and being constantly under the supervision of experienced teachers, the necessary agents of a well-organized system, they would learn to perform their various duties upon the most approved principles. It is one of the prevailing difficulties connected with the satisfactory working of education among the rural classes, to combine the studies of the school-room with the manipulations of the farm. At the present crisis, a youth, the son of an agricultural labourer, supposing him to have received scholastic education suitable to his condition, has to learn to labour on the farm as best he may, having in most cases no preceptor capable of giving him instruction or controlling his conduct: thus he acquires self-taught habits, after the rudest and most awkward customs, and he toils on without either improvement to himself or profit to his employer. Under a good system of management agricultural companies would provide for such exigencies, to the very great advancement of education among the rural classes. They might go still further with this step towards improvement. The resident superintendent being a person of experience would be qualified to take pupils, by whose instrumentality the business of the establishment would be under constant inspection, and the profits augmented by the premiums paid for their education.

THE ADVANTAGES OF DEEPENING AND MIXING SOILS.

At the late meeting of the Winfrith Farmers' Club, Mr. Clarke, of East Lulworth, read the following paper:—

The subject for discussion is the "Advantages of deepening and mixing soils." From Adam's fall to the end of time, the earth has been consigned by a benign and benevolent Providence to the control of man, with certain conditions appended. One of those conditions was that man, being endowed with reason, should give freedom of development to his mind, and not let the earth remain a barren waste—not let it remain unproductive or unfruitful; but that he should apply his energies and sagacity in procuring sustenance for the most noble of God's creation. As ages rolled on, various modes were tried and adopted by our forefathers to deepen and mix the soil for the benefit of their fellow-men. Their implement was the plough of ancient husbandry, and many of our neighbouring hill-sides bear the deep mark of that plough even to this day. It was but the work of a day to fashion it from the growing timber to the finished implement: it was fastened together with wooden pins, had its mould-board of wood, and all the iron in its composition was the coulter, the sock, and sometimes the bottom plate; but the plough has passed through many transformations since the days of our Saxon ancestors. Almost every parish has now its ploughmaker, who watches the agricultural exhibitions, ferrets out and compares the alterations and improvements, adopts and applies such as his judgment fancies, and has them tested by some favourite ploughman before submitting to public scrutiny. And in these our enlightened days, what advantages do we possess over our ancient fathers! We have the advantages of implements of husbandry unknown to them. Art and science have made rapid strides, and the agriculturist—ever watchful—ever vigilant—ever sedulous over that portion of the earth committed to his care—has also made great progress in the science of his calling. And, now, Sir, I will give the result of practical observations and occurrences which have fallen in the pathways of my avocation in the markets and gardens round London. I have seen the good effects of deep cultivation and mixing of soils, and those gardens are to a great extent practical standards of highly-skilled agricultural science. Near London this deep and successful cultivation is carried on with an annual application of capital of nearly £50 per acre; namely, £20 for manure, £20 for labour, and £8 to £10 for rent, local taxes, and other charges. Many of those garden-farms are but small; the most successful are on a large scale. On one of 400 acres, I am informed that £4,000 per annum is expended for labour alone, and £3,000 for manure. There is but one opinion about deepening and mixing the soil, and that opinion is in favour of deep cultivation. I have known a farm long since, where the custom and invariable rule was not to plough more than four inches deep; and, by adhering to this fixed code, the stratum beneath became as hard as a turnpike-road; I will admit that the land I allude to lay flat. I have seen it under wheat, and during the winter months the rains of heaven could not penetrate through the subsoil, and I could compare it to nothing else than a floating mud-pond; but when the cold, cutting, and cheerless blast of spring came, I have seen this worn-out soil crack open, and become as hard as a rock—I am almost tempted to say—of Nature's true formation. I have seen the poor and dwindling plants struggling for existence in this forlorn soil. But a change took place, and instead of turning over this old worn-out stuff of four inches, the plough dipped deep, and turned up seven; this was not done at once, but gradually, and as the winter fallows came to be ploughed. I have seen that same land under wheat a few years after this change took place, and I could scarcely believe it was the same farm, for a finer or more healthy plant of wheat I have never seen, and this in a great measure I attribute to the deepening of the soil, and turning up that hidden treasure which had been lost to man for years. I have also seen an experiment carried out upon a poor piece of land with a retentive and stubborn, cold, subsoil clay. Two modes were adopted; one was to trench the land two feet deep, turning the top sod under, and the clay upon the top; the other had the top sod removed to a convenient distance, and the subsoil loosened up and well chopped, and the top sod of the next layer, or trench, placed; upon that. Both pieces were planted at the same time, and with the same sort of trees. What was the result? It was obvious those planted in that part with the clay upon the surface stood still, for the best of all possible reasons—when the spring winds came and the summer drought followed, this ungrateful soil refused to drink of the refreshing showers from above, or inhale the dews of heaven; it became hardened to Nature's call. But those planted in the top soil uppermost grew most vigorously and luxuriantly; thus showing the fatal consequence of turning up that soil which is impervious to the laws of Nature. Mr. Chairman and gentlemen, I will call your attention for a few moments to the system I adopt. Mine is a four-course one, and when I plough my wheat stubbles, say in October, if I can turn up six inches of good soil, available for most purposes, I am like many more of the world—dissatisfied; I want more; I want a slice of that soil which has been hidden from the light of day for four long years, to mix and incorporate with the other; and whether it consists of loam or partakes of a gravelly nature, my impression is that it infuses new life into that soil, whatever its composition may be. Perhaps you will ask me, am I an advocate for deepening all soils? Certainly not. And why? Because all soils are not of the same nature. Perhaps you will ask me, am I an advocate for turning up light lands? Certainly not; unless I had thirty loads of marl to top-dress it, or the same amount of clay. And in due course you will naturally ask me, am I for turning up a sour, cold clay, partaking of something of iron ore? I am not; because that which is impervious to the sun's rays or the winter frost had better remain where it is. But ask me, am I for deepening and turning up a loamy subsoil? I am; and by exposing that alluvial soil to the action of the air, it becomes useful and imparts new life into the other. With these remarks, gentlemen, I trust and hope you will discuss this subject fairly and freely, and though you may differ from me in some new points, I will say,

Be not the first by whom the new is tried,
Nor yet the last to lay the old aside.

Mr. Chairman and gentlemen, it now only remains for me to thank you very sincerely for the patience and attention you have given me.

Mr. **Lillington** said he would give them the result of his experience, a few years ago, with respect to deep ploughing. He agreed with Mr. Clarke upon this point, that it was one of the most essential things they could do. He had forty acres that were overgrown with thistles, and could not keep them down; but he went to work with it, ploughed it two furrows deep, and had never had a thistle to hurt him afterwards. In answer to questions, he explained that he had grown good crops since, last year the produce of barley being ten sacks per acre. The depth he went to was eight or nine inches. It was not on chalk, but different soils; some of it patches of clay.

Mr. **Saunders** observed that he thought they should all put their shoulders to the wheel, and state what they knew with respect to such an important subject as the deepening of soils. He certainly must congratulate Mr. Clarke upon the able manner in which he had, at so short a notice, introduced this subject. He quite agreed with him in many points, and was of opinion that all soils did not require deepening. As far as his experience went, he had found more benefit in deepening some soils than others. He could not find any benefit on good lands, but on bad he had seen a great deal of difference. On the farm he now occupied he had a very thin piece of chalk land, and his landlord told him, with reference to it, that if he could get two new oats for one old one he must be satisfied. At first he could not plough it above two and a-half inches deep; but he had since gradually worked it deeper year by year, until he had now six or seven inches to work upon. The chalk had been pulverized as it was brought up, so that it was now quite a white earth. When he first had it he did not get half a crop; it was all in patches; but now he could grow a fair crop, with a liberal allowance of manure, and he considered it was three times as good as it was before. He had tried it where he had a good subsoil, and there he could not find much difference, although he had subsoiled one part and not the other. In breaking up some heath land, however, he had found it did a wonderful deal of good where the land was hard underneath, which the water never could penetrate. He did not turn up the poor soil, but moved it. After noticing some other experiments on this point, Mr. Saunders said they showed him that in some cases the deepening of the soil was a benefit, and that in others it was not, so that every man must judge for himself. He thought that all stubble land should be ploughed deep. He often found where land was hard it wanted subsoiling. As an instance of this, he had seen a ditch made across a piece of land, and the earth thrown in again, but the wheat was twice as good there as it was where the land had not been moved. This showed the land wanted deepening. If a person would only try a little, he would soon find whether his land did require it or not. He considered the deepening the soil a very important subject, and hoped to hear the opinion of other members upon it.

Mr. LILLINGTON said he once saw their chairman subsoiling a piece of land, of which he seemed to have made a capital job. He should like to know whether he had found any benefit from it.

The CHAIRMAN replied that he had not, and further observed that he perfectly agreed with the practical observations of Mr. Clarke. He did think—and in doing so, he somewhat differed with Mr. Saunders—that the soil to plough deep was the best soil. Now, Mr. Saunders did not think that answered so well as ploughing the thin soil and bringing the chalk up a little at a time. He (the chairman) had tried that on his farm, where he could not go four inches without getting upon the chalk, and when he had brought a little up, he found that he could not grow wheat on it for years, therefore, he thought they did wrong if they went deep on bad soils. He had another experiment, to which Mr. Lillington had alluded, on a piece of sandy land with a light loam on the top, which he had subsoiled, but he did not think it did either good or harm.

Mr. SAUNDERS explained that he could at first scarcely grow any crop at all on the thin piece of land he had alluded to; but after he had gradually worked up the chalk, which had become pulverized, he could grow as many sacks as he could bushels before.

Mr. LILLINGTON observed that by putting a good deal of manure it would make soil.

Mr. SAUNDERS said there was never any depth before.

Mr. TAYLOR suggested that if Mr. Saunders had manured it well at first he might have grown a good crop.

Mr. SLY said he knew it before Mr. Saunders had it, and should not think it was hardly worth the trouble of cultivation.

Mr. SAUNDERS made a few observations upon the miserable crops he found on the piece when he went to view the farm.

Mr. READER said the opinion seemed to be various as to what soils they should deepen and what they should not deepen. Now there were a great many opinions as to deepening soils on chalk farms. On the wolds of Yorkshire they do not like deepening the soil where it is upon chalk. Their opinion is that the chalk forms a bed, and when once they broke that bed, where it was a thin soil, they were more liable to lose the manure. Whether their chalks were soft or hard he could not say. The different nature of the chalks in his opinion ought to have a very great influence on this question; because they were well aware that there were some chalks in this neighbourhood which, if brought to the surface, would take years to pulverize and come to what was termed a white earth. There were other chalks not very far distant which a week's frost would bring into as fine particles as the other soil. They knew very well that where they had chalk and put a large quantity on light soils, they lost all their wheat plants; but too great a quantity could scarcely be put upon the heavy, strong soils. He had no doubt in his own mind that, if they had got a soft chalk, and if they could deepen the soil gradually by not bringing too much to the top at once, and the previous soil was of anything like a strong nature, they would benefit by it. But, at the same time, the question was, when is that to be done? He did not think they ought to do it anything like previous to wheat, or in the spring. His opinion was that it should be done in the fall, on the stubble, previous to roots. Deep cultivation for roots is beneficial, and they could always see in these where hedges and ditches had been levelled; but he could not say the same with regard to corn crops. Wheat was not better for deep cultivation, and when the deepening did take place, it ought to be for the root crops, after the wheat. The worst thing they could do was to bring up white or black sand, as it was not often they got a clay upon that; if so, it might be beneficial. He had been looking over some experiments on this subject, and the parties stated that, if land required draining, it ought not to be subsoiled until two years after the draining, and for the root crop, when it did a great deal of good; but subsoiling clay did more harm than good, if not drained. They also stated that they never experienced any benefit from subsoiling clay, except where stones were intermixed with it. Another experiment was made with deep ploughing for potatoes. The land was ploughed and worked ten inches deep, and produced 23 cwt. of potatoes more than that ploughed and worked five inches deep. The same field ploughed for wheat the following fall, some portion of it ten inches deep produced 27 bushels per acre; whilst that ploughed five inches deep produced 31½ bushels per acre. Another portion ploughed three inches deep produced 32 bushels per acre. The deep ploughing produced the most straw, and to the casual observer was the best crop, and this showed the necessity of carrying out experiments to the end, and carefully comparing the results. An experiment was also made in another field, where clover land was ploughed for wheat: one portion of the field was ploughed five inches deep, producing 34 bushels of wheat per acre, and the other part was ploughed three and a-half inches deep, producing 37 bushels per acre. The same field was managed in three different ways: one portion grubbed to the depth of twelve inches three different times in the fall, and the remainder of the field ploughed twelve inches deep, also in the fall. That part grubbed in the fall was grubbed again in the spring, at the same depth, and produced 21½ tons of swedes per acre. Half that portion ploughed in the fall was worked with the grubber to the depth of twelve inches in the spring, and produced 23½ tons of swedes per acre. The other half that was ploughed in the fall was ploughed again in the spring, and produced 19½ tons per acre. The whole, it should be stated, was manured alike. The land was sown the following spring—part with oats and part with April wheat. The land grubbed for swedes was again grubbed for wheat, one portion to the depth of ten inches producing 84 bushels of oats per acre, and 34 bushels of wheat per acre; the other portion, grubbed four inches deep, produced 80 bushels of oats per acre, and 38 bushels of wheat per acre. No. 2, ploughed and grubbed for swedes, one part ploughed ten inches now produced 91 bushels of oats per acre, and 47⅔ bushels of wheat per acre. The other part ploughed four inches deep, produced 85 bushels of oats, and 41¾ bushels of wheat per acre. The other portion ploughed wholly for swedes, one part ploughed now ten inches deep produced 90 bushels of oats per acre, and 38 bushels of wheat per acre. The other portion, ploughed four inches, produced 83 bushels of oats, and 42 bushels of wheat per acre. The land was then all sown to seeds, and produced a good crop the following year; but the deep cultivated land was much the best, no difference appearing between that ploughed deep and grubbed deep. The deduction he (Mr. Reader) made from these experiments was that deep cultivation answered well for root crops and oats, but not for wheat. He then gave an instance of the successful manner in which he had cleared a piece of land from thistles by deep cultivation, and expressed an opinion that it was impossible to get rid of them by shallow cultivation, as the roots were not disturbed by the plough. He thought it ought to be done in the fall of the year, on the wheat stubble, because, in bringing up the subsoil, if it was a retentive soil, they could pulverize and work it better than if ploughed towards the spring. They all knew very well that when they ploughed their land in the fall of the year, or early, it brought better crops than doing it late. He detailed an instance of this that had come within his own experience, and concluded by commenting on the necessity of carefully testing every experiment they made, and not merely being satisfied with appearances.

Mr. SAUNDERS explained that he did not deepen his chalk soil at once from two and a-half inches to six or seven inches. He took a little deeper every year—about an inch—and always in the autumn, so that the chalk was always pulverized during the winter. If turned up in the summer, the sun would burn it, and it would never "slatch." He quite agreed with what had been said with respect to freeing the land from thistles by deep cultivation. He had subsoiled a piece, and put a man with a pick to throw up the thistle roots, which were as long as a tobacco pipe. The result was that they all died, and he had never seen a thistle there since.

Mr. JACKSON, having been called upon, said he was not aware that he could give them much information upon deep ploughing on the farm he at present occupied, as he had only been there a short time; but probably he might be allowed to make one or two remarks with respect to his experience in Hertfordshire. After alluding to the unanimity of opinion that prevailed in the Club on this subject, he remarked that the individual who Mr. Clarke had said put the bottom "spit" of clay at the top, and the top soil at the bottom, was somewhat in the position of the man who, after the funeral of his wife, sung the first line of the Doxology; he had buried his best friend. (Laughter.) He quite agreed with the other experiment in which the best spit was kept at the top, loosening that underneath, as it allowed the water to get away. He also gave an instance of the good effect subsoiling had on his father's farm in destroying thistles. With respect to ploughing deep, he thought on all soils they ought to plough deep to a certain extent, say five or six inches. If they had a good loam, they need not be afraid to plough it up; and if they had a poor soil underneath, with shallow good soil at the top, he thought they need not be afraid to plough it up to a reasonable depth, because it was better to have poor soil at the top than just at the roots. At the same time, he did not advocate burying it very deep, so as to have the good soil out of the reach of the roots. As regards chalk, in Hertfordshire it was of a soft nature, and he was not accustomed to hard chalks. Where hill chalk was subject to burn he would not plough deep; but that he alluded to was not of that description. Although when ploughed up it was quite white, it became darker and the soil loamy. Mr. Jackson concluded by expressing his concurrence in the views of Mr. Reader with respect to ploughing deep for the root crops, and not for wheat.

Mr. SAUNDERS, in reference to the advisability of not ploughing deep for wheat, stated that he had ploughed for wheat full six inches deep, putting in a good coat of dung. In the spring he thought he had a good piece, but to his surprise at harvest it turned out very bad. He believed he should find the dung just as it was put in, not having come into action; for if they paid attention to the root crops, as well as corn, they would find that the feeding roots are near the surface. He did not consider it was on account of his deepening the soil, for if he had put the dung in afterwards, no doubt he would have had a good piece of wheat.

Mr. **Taylor** thought they should always plough as shallow as they could for wheat.

Mr. **Groves** made a few practical observations upon the advantages which might be derived from a knowledge of geology, in deepening and mixing soils.

After a few observations from Mr. Clarke, the discussion terminated.

THE HIND-SYSTEM IN LINCOLNSHIRE.

At the commencement of this year's session of the London Farmers' Club we congratulated that body on the attention which they, the Commons House of Agriculture, were bestowing on the condition of the agricultural labourer. It was much needed. Amidst the march of agricultural progress by which the past century has been distinguished, it is a lamentable truth that the condition of the agricultural labourer has deteriorated. This was placed in a strong light by Mr. Baker, of Writtle, who declared that in many districts where labour was abundant, advantage had been taken of it to reduce wages to the lowest minimum point. There the labourers were not so well off as they were in 1775.

The latest subject for discussion on this text was, "The best and cheapest mode of boarding and lodging farm-servants." With the altered habits of farmers—and not only of farmers, but of other classes—to board and lodge their labourers in the farm-house has fallen into disuse, and is not likely to be revived. There appears, therefore, to be only three courses open to us in this, as the late Sir Robert Peel so often found it in other cases. These three courses are—the practice detailed by Mr. Marshall, as prevailing in part of Lincolnshire; the practice of Essex, as described by Mr. Baker, which he pronounced inferior to it, in point of economy to the farmer, as well as of advantage to the labourer; and a third, which was not touched on in this discussion—namely, the employment of hired householders, resident on the farm, in cottages of their own, and paid chiefly in bacon, meal, and malt, at the same rate as the single men in Lincolnshire. This would divide among the hinds—we like that good old English name—some of the advantages which in the Lincolnshire plan are absorbed by the foreman. From some remarks which Mr. Marshall made in the outset, it would appear that the plan adopted in Lincolnshire has originated there since 1849; and therefore if it can be proved that it is susceptible of further modifications, which, while they will be equally beneficial to the farmer would have a better moral influence on the men, there cannot be that difficulty in their introduction which besets every attempt to introduce improvements on long-practised habits or institutions. Mr. Marshall's paper embraced both parts of the question:—the advantages of the system to the master, and its moral influence on the men. The former part of the question, however, was that chiefly dwelt on; the latter being but slightly touched on, with the exception of the statement that it is part of the duty of the foreman on the farm, with whom the men reside, to see that they attend public-worship once at least on the Sunday. We learn further that the rector of the parish kindly attends on one evening in the week, to instruct the young men in writing, and to expound the Scriptures to them. In this point the system appears susceptible of improvement. The clergyman does quite right but no more than his duty to give the young men religious instruction; but we do not know that it is necessary he should be the parish writing-master. An evening school, to be frequented by the young men of several farms, should be held on more than one evening in the week, and should be supported partly by subscription of the farmers, partly by the payments of the pupils. We are great friends to education, but not to gratuitous education. What we pay for, we value most; and these young men should contribute to the expense of their own instruction. Proceeding, however, to the material advantages of the system to the men. The practice of South Lincolnshire is thus described:—It is customary, we are told, to keep on a farm of 500 acres five farm-servants, under the superintendence and control of a married foreman. The manner in which they are employed forms no part of the question to be discussed in the present article, beyond the observation that the first and second waggoners are wholly employed from four in the morning till eight at night in the working or feeding and caring of the horses, and that the three juniors when not with their horses amuse themselves from four to six in the afternoon cutting chaff. If this kind of life leaves little time for mental cultivation, it has the advantage of allowing little for mischief.

These men live with the foreman, for whom a commodious house is provided, with an ample vegetable garden, rent-free, with the produce of two cows for five, or one cow for three men. He is allowed also a fat pig weighing 26 stones, and one of the like weight for each of his men. He has forty stones of flour for each man, one quarter of malt for himself and the harvest-men, and a sack of malt for each of the men. He is allowed five tons of coals for the consumption of the establishment; he finds candles for the chaff-house and stable when required, and is allowed 1s. a-day for casual boarders, such as additional harvest-men, smiths, &c. The men have three meals a-day; and, of a truth, the bill of fare savours more of America and Canada than of the dietary of the rural labourers of the South of England, and of that period when it is on record in evidence given before the House of Commons, that their dinner in some of the southern counties consisted of cold potatoes carried into the field. Here is the carte :—For breakfast, hot bread-and-milk ; dinner, hot meat, pies and puddings, vegetables, and one pint of ale ; supper, hot meat, bread-and-milk, or peas' soup. They pay for their own washing (to the foreman's wife). If they work hard they live well, and they are allowed a holiday of three or four days in the year. If there be any fault to find with this mode of management, it is, that it has the appearance of putting the men too much in the power of the foreman and his wife. These personages have certainly a good time of it; for, we are told that, in addition to the above, "the foreman's wife shares largely in the profits of the system," inasmuch as she has the surplus milk and butter of two cows to dispose of, valued at £20 to £25 per annum: she has also the privilege of raising poultry and collecting eggs. For these, we are told, she receives a certain price per couple, out of which she pays her maid-servant and retains the residue for herself.

As Lincolnshire holds a geographical position midway between the north and south of England, it may be considered as holding an intermediate position in the management of its labourers between those points, and its bill of fare is superior to both north and south. Its moral influence is inferior to the hind system of Northumberland, so well described by Mr. Grey, of Dilston, and the late Canon of Noreham. The modification which the Lincolnshire system appears to require is this—that for the one barrack-cottage the farm should be provided with one for the foreman and one for each of the ploughman; that each of them should have a quarter of an acre attached to this cottage, and the privilege of keeping a cow, and also the keep, summer and winter, of a cow purchased by himself, according to the Northumberland system. It would be better that the services of the foreman should be paid in a different way than by an addition to his wages of what he and his wife can make by boarding the men. Let us put this as an argument; and as such we should very much like to hear what our Lincolnshire friends have to say against this modification of their system.

THE VARIOUS EFFECTS OF CLIMATIC INFLUENCE UPON CULTIVATION.

Very few agriculturists, horticulturists, or gardeners duly appreciate the effects of atmospheric influence upon the cultivation of cereals and vegetables. The majority of them, from carrying out their operations on the same spot during the greater portion of their lives, have but little opportunity of comparing their own with other districts. Even those removing from one locality to another attribute any differences rather to a change in season than to the laws that govern such diversity of effect.

Within a very short distance, climatic influences of very different character may be found to exist. Take, for example, a farm or garden lying close upon the borders of a large river, and another upon a hill-side or upon its summit. If a careful register be kept of the day and night temperature throughout the year, especially of the spring and autumnal months, a much larger difference will be found to exist than could possibly have been imagined without the test of such an accurate investigation. In a valley, the excess of moisture arising from evaporation becoming suddenly condensed at night, or under sudden changes of temperature, so much diminishes heat that plants are frequently cut down by the early or late frosts; whilst upon the hill sides or summit they escape altogether. During the severe winter of 1839, scarcely an evergreen of the Laurustinus or of the common Italian laurel survived in sheltered situations in the valley; although upon the summit and the sides of the hill, even in a north-easterly aspect, they escaped unscathed. The same with fruit trees in the present season, and, indeed, in almost every preceding one. Fruit is found abundant upon the upper portion and sides of the hill, especially upon the south-western side; but in the valley below, near to the river, scarcely any is found to exist. What there is has been obtained only by carefully protecting the trees throughout the months of March and April. The hardy gooseberry and currant are not exempt from this rule, being always an abundant crop in the one situation, whilst in the other they are invariably deficient.

Upon lands adjacent to the sea-coast of the eastern portion of this island, the general effects of the winter act less injuriously upon plants and evergreens than at a farther distance inland. Within but few days, we have seen myrtles of a large size growing vigorously; the wheat was also fully a week more forward in the ear than we afterwards found it twenty miles further up the country. And root crops, such as the swede and common turnip, invariably suffer less injury here, than in upland situations. This difference, no doubt, arises from the temperature of the air, during the winter and spring months, being raised by the increased temperature of the sea-water. On the other hand, inland, the temperature of the air is reduced by the contiguity of rivers and by the continuous and successive evaporation always rising from the adjacent meadow lands by which they are bounded.

Our attention has been directed to the effects of this difference of atmospheric influence upon two gardens little more than half-a-mile apart, both having a northern aspect, and about equally protected by surrounding timber and plantations. For several years past the dahlias and chrysanthemums continue in full flower, in one garden, for two or three weeks later than in the other. During winter the broccoli, celery, and tender vegetables are also either destroyed, or nearly so, in one situation, and but little hurt in the other; the difference as regards altitude being somewhat above 60 feet. Upon the marshes, before alluded to, the wheat is ready to harvest a week earlier than upon the uplands adjoining, and at least ten days earlier than in the districts situated from twenty to thirty miles further inland.

We, of course, are not treating upon this subject upon general principles of isometric science, by which it has been long established that the mean temperature of a country does not depend upon its latitude, but rather upon its altitudes and the proximity that it has to the sea. This has been fully expounded in the *Journal of the Royal Agricultural Society*, and in some of the discussions of the London Farmers' Club. We shall so only advert to the fact so far as it may illustrate our present observations. Thus: From New York, through Sligo and Dundrum Bay, Ireland, through the middle of Yorkshire in a line from Preston to Hull, Amsterdam, and Dresden, to the northern shore of the Black Sea, are all represented to be equal as regards temperature, although the latitudes differ 17 degrees. Again, the altitude of mountains also affects the temperature. As we ascend, it decreases, until we approach the snow line, where vegetation entirely ceases. Applicable to our present subject, however, we shall only direct attention to the circumstance that heat is transmitted by the sea, the temperature of the water being mostly, during winter, from 10 to 15 degrees higher than the temperature of the air. Thus, by imparting its heat to the atmosphere, all places situated near the sea, especially upon those portions of our western coast extending from Plymouth to the south of Ireland, are many degrees warmer in winter than those portions of the eastern coast lying in the opposite direction.

As regards the local distribution of heat, to which we have before adverted, we find it depends, inland, upon the moisture arising from the proximity of rivers, and upon which side of the hill the land slopes. We are disposed to think that at an elevation of from forty to eighty feet from the river, upon a south and south-western slope, will be found the best situation for orchards and gardens, as well as for purposes of general cultivation. And even at an elevation of another hundred feet they would succeed better than if situated in the valley within a short distance of the stream.

The quality of the soil doubtless operates very sensibly upon the early growth and maturity of cereal and vegetable crops, but the production of fruit depends more upon the temperature of the air and its being less combined with moisture. This can only be obtained at an increased elevation, and with a sufficient protection by judiciously planting wherever such shelter is not found naturally to exist.

In the situation of a farm, the position has more to do with a successful result than inexperienced persons are apt to imagine. There should be a slight inclination to the south or south-west, which ought not to be too sudden or abrupt. Those apparently flat table-lands lying upon the skirts of valleys perhaps are best, if sufficient fall can be obtained for under-drainage. It is from this circumstance that farms bordering upon valleys, having tracts of meadow land below and arable land immediately contiguous lying above, are mostly sought as the best, as regards soil and situation. But the land best adapted for the production of green crops is usually found in the next series ascending; and as the hill-top is approached, the crop will generally be observed to diminish proportionately in quality.

No general principle can be laid down. Still, however, the endeavour to seek one must to a certain extent be attended with advantageous results.

HOW GOOD DRAINAGE ACTS IN HOT WEATHER.

To talk of the benefits of drainage during *a dry hot summer* may appear to some people as inapposite as to congratulate the inmate of an iron dwelling-house on his possession of a fire-escape. So prevalent is the belief that underdraining is useful solely for the purpose of letting out water from the soil, that comparatively few practical farmers look for any advantage except in a wet season; not that they are ignorant of other uses of drainage beside letting off surplus saturating water: no farmer worthy of the name would wish to conduct rain-water off his land by surface-grips, or have recourse to underdraining simply to tap the soaking subterranean springs. We know better than to seek merely the drying of our fields: we eagerly catch the fertilizing rain, and filter it through our soil; and have even got as far as "aëration." It is clear that by sending down the rainfall through the soil in quick and unobstructed percolating streams, instead of suffering it to stagnate and saturate and slowly find an escape by evaporation and by passing away in a barren surface-outflow, a great number of successive charges of atmospheric air are introduced into the interstices; and this air contains fertilizing gases, and prepares inert mineral ingredients for the use of plants, beside operating mechanically in improving the texture of the soil. Every drop of water sinking through a crevice expels the used-up or spent air there present, and draws in after it another charge of fresh; very small quantities of water thus refilling the cracks and channels of the earth, with large quantities of air—just as a small quantity of liquid flowing through a pipe drives out the volume of air occupying the whole length of the pipe, and is followed by another volume equally large.

But what action can the existence of under-drains create or facilitate, at periods when there is no water to penetrate and pass through the ground? Why, a soil that has been permeated with fissures and crevices by the repeated wetting and drying, and the agency of currents of water and air consequent upon drainage, is actually *damper* in hot dry summer weather than land which has not been made thus porous. Under-draining land not only dries, warms, and enriches it in wet weather, but also moistens it in time of drought.

The sun's rays heating the surface of the earth produce an upward current of air through the soil, just as certainly as the blazing chandelier of a theatre, rarifying the air in the roof, causes a current to ascend to it from the building below. Each crack or worm-hole in the ground acts as a chimney, only that the ascending "draught" is occasioned by a fire above instead of beneath. But air is also drawn upward in another way: the evaporation of moisture at the surface, and the absorption of it by the roots of a growing crop, suck up water from below by capillary attraction; and air follows the successive drops and tricklets of water up through the pores and tubes between the particles of earth. A sufficient number of clear open under-drains thus provides a free circulation of air; and this will not only rise through the soil immediately above the drains, but will spread out on either side, as the upward current is produced at every point of the surface, and so draws the air from the drains laterally as well as vertically. Well, but will not this admission of warm summer air into the soil tend rather to dry it still further than to moisten it? No: atmospheric air always contains some invisible watery vapour, which will be condensed upon a body colder than the air itself. The surface of a tumbler of cold water is covered with dampness on a dry hot day, owing to this condensation. Now, as the soil (excepting just at the surface) is always colder than the air on a warm day, the air passing into the drains and up through the soil gives up its watery vapour to the cooler soil in the same way that it does to the cold glass. And so important is this aërial conveyance of moisture to supply crops during a drought, that a system of air-drainage, or the laying-down of hollow drains in such a manner as to facilitate the introduction of air along their entire course, has been advocated and largely carried into execution by practical men.

Besides this actual subterranean watering of the ground by the agency of warm humid air, of course there are other advantages found in dry weather from a well-drained soil. The ameliorated condition of the ground for several feet in depth renders it more absorbent and retentive of moisture dropped by dews and acquired from the atmosphere. And again: as the roots of plants penetrate much deeper and spread wider in a deeper-drained than in an imperfectly-drained soil, they are as it were out of the reach of drought, and from their greater extent obtain a larger amount of moisture and nutriment; so that in consequence of good drainage, our crops are in many ways supported and preserved through "dry times," and frequent recurrences of "hot Wednesdays." Let the undrained, shallow-ploughing farmer watch with apprehension his barkward mangolds, his scorching peas, and dried-up wheat; but those of us who have obtained a deeper acquaintance with the soil, and burrowed more profoundly into the resources of our planet, may welcome a fervid sun without dismay, and smile at the complaint of our thirsty neighbours who have neglected to make a cistern of their soil and a spring of the atmosphere.

THE FARMER'S LIFE AND DUTIES.

The joys of a rural life have been sung by the poets of all ages. It has been as favoured and inexhaustible a theme as love, war, or wine. That this should be so is easily understood. One can well picture the Muses' child delighting to dream his days away in the leafy solitude and sweet contemplation of the country. But it is not the poet alone who finds attractions here. There is scarcely a man amongst us that does not set his heart remote from the cities for the scene of his chief pleasures. From the busy statesman to the plodding citizen the feeling is alike the same. While the one counts on the few weeks he may have at his ancestral seat, amongst his horses and his hounds, the other boasts of the strawberries he grows in his garden and the appetite he has for his breakfast. In short, men endure the town and enjoy the country.

How happy then must be his lot, whose very business requires of him a country life; who snatches not merely a few hours or days of fresh air, but passes one whole round of such uninterrupted enjoyment! He it is we celebrate in song. For his glory did Virgil turn the economy of farming into hexameter verse. Dedicated, as it were, to him especially, did Thomson mark the varying seasons. With such a one, as the central figure in his sketches, did Blomfield live over again the life he had left. If, amongst the many who toil on in the sweat of their brow, there be a happy man, it is the tiller of the soil. All history goes to assure us of this. And if, indeed, we want any further confirmation of our felicity, we ourselves may offer it.

Amongst the few local farmers' clubs that still really continue in actual existence, that at Reading holds a prominent position. It is especially commendable for the good tone and ability with which its discussion meetings are conducted. Although not, perhaps, mustering as many as it should, there are always some earnest practical men present, to keep the thing going, and to extract a profitable deduction from the subject considered. We confess to have watched the operations of this Society for some time past, and in doing so have noticed how generally well the various topics for debate have been selected. It must, of course, necessarily happen that many of these have not come altogether new to us. What with the gradually lengthening tale of the London club, and the occasional outbreak of similar associations, there are few matters now in any way associated with agriculture but have received at least some passing attention. The Reading Club, however, has wound up its summer session with one that scarcely comes so accustomed to the ear. It is neither Manures, nor Weights and Measures, nor the Condition of the Labourer, nor our Systems of Tenure. It is rather—to be no further mysterious—what the poets have been singing about, than we as farmers and farmers' friends have been talking and writing about—"The Farmer's Life: its means of usefulness compared with those of any other occupation."

Mr. Bourn made the most of his subject. To be sure, he did not go very much into the comparison suggested by the wording of it. The Farmer's Life, however, was everything in itself. Mr. Bourn only more and more strengthens the Arcadian visions we have all of us indulged in since we first came from under the tegmine fagi:—

"I argue that he ought to feel, amidst the animating and elevating scenes necessarily before and all around him, a spirit of devotion, and a great measure of thankfulness, as he begins, goes through, and finishes his day's duties—more by far than those whose occupations lead them to the crowded city, the close counting-house, warehouse, or factory, where the rays of the sun hardly penetrate, where Nature is almost entirely shut out, where the air inhaled again and again yields no reviving power. Oh! how gladly does the merchant resort, after each day spent in the confined and smoky atmosphere of the town, to the fresh fields of the country—to the very locality where, gentlemen, you happily-lotted farmers, pursue your calling. You are placed for your business where they nearly all choose to go for enjoyment. No occupation so conduces to a reverential tone of thought as the farmer's. It has been said

'God made the country; man the town.'

Each product of the fruitful earth, as it proceeds onward from the seed to its latest growth, from sowing-time to harvest, calls aloud to man to observe with gratitude the ways of that Providence which has formed him, and never fails to feed him. * * * The study of the anatomy of the diseases of animals, necessarily the companions or objects of attention to the farmer, is a branch of usefulness peculiarly his own—and the feathered tribe give their aid, some yielding him a luxurious food, whilst others of them afford him only a gratification to his sense of hearing by their strains of unlearnt music. Oh! the life of the farmer, for all that cheers and animates the mind of man to the contemplation of his Maker—of the Maker of the earth he walks on—of all things living around him! And if in his duties the farmer has a constantly exciting call for rejoicing and thankfulness, how much more than to the dwellers in cities is allotted to him the opportunity of usefully employing his leisure time! The master or artizan employed in the close courts or streets, or dwellings of a city, have no rural sights or sounds in their immediate neighbourhood to cheer or animate them after the fatigues of their daily labour. No, their strength and health have been consumed—aye, exhausted in the pent-up shop, factory, or counting-house during the day, often for more hours of protracted labour than the farmer and his labourer, in the foul and pestilential atmosphere of a polluted city, amidst all its abominations and crime-creating influences." And then "Kirke White," and "the Farmer's Boy" come to his aid to make the picture even more perfect still. And so Mr. Bourn, though not perhaps quite so fully reported as he should have been, sits down, having made out a very good case. The farmer is the happiest man alive; and if he is not in every way the most useful, he ought to be.

Unfortunately, however, Mr. Bourn is not a farmer. Like his friend Thomson, he has been depicting the pleasures of early rising simply from the force of his imagination while lying in bed. Or as with Walter Scott telling us how to visit Melrose "aright," when he never saw it by moonlight in his life. Or, profiting by the example of Sheridan Knowles, and dwelling on the delight with which he backed the flying steed, the probabilities being that his steeds never went out of a hunting trot. So it was with Mr. Bourn, carried away in the height of his imagination to a very Utopia of his own creation. But the Reading Club could hardly stand this. Mr. Haslam, who followed, admitted that "Mr. Bourn had certainly culled out the flowers of the agricultural life, and placed them before the club in a manner that could not fail to gratify; but he (Mr. Haslam) confessed that he could have sat much longer to have heard him say more about the means of usefulness of the farmer's life, as compared with persons of other occupations. Persons who visited a farm-house occasionally, walked over the well-cultivated lands, and partook of the hospitalities of the farmer, could form no idea at all about the machinery working behind, or of the disasters which almost daily occurred. True it was that the farmer contributed largely to the social comfort of the people, but no one could judge of the usefulness of the farmer's life without he saw and was thoroughly acquainted with all that was going on every day in the year. Were they to look at his usefulness in the great and increased means of growing corn which he might possess? Would that make the farmer's life more useful without contrast? Whilst he was prepared to say that the cultivation of the soil was the foundation of what was necessary for a country, yet there were other and higher branches of life not connected with farming which were more calculated for usefulness among men. Could it be said that the farmer's position was better for the diffusion of knowledge which rendered his life more useful than any other? Many farmers for years past had carried on their business on the scientific principles developed by the age, and had demonstated that they were a class highly intelligent and educated, and were anxious and really did much for the benefit of the nation, but he (Mr. Haslam) could not admit that the farmer's life presented, on comparison with that of others, superior means of usefulness."

The actual farmers present would seem to have become gradually alarmed at the highly-coloured picture their amateur friend had presented to them. Not one was willing to admit the fidelity of the portrait. They all seemed to think, on the contrary, that he had flattered them most terribly. And every man straightway began to tone down the very prominent features given him. Mr. Belcher thought "it would be very unfortunate if the idea were to go abroad from the Farmers' Club that they expressed an opinion that the farmer's life was all pleasure and all profit. (Hear, hear.) Many persons had the notion that the farmer had nothing to do but to stroll about the fields with a gun in winter, and walk among the hay in summer. The means of usefulness within the reach of the farmer were many, and there were also many within the reach of every man—not more within the reach of the farmer than the merchant, tradesman, or other parties. . . . The farmers were undoubtedly exposed to the loss of property in a way that tradesmen and merchants were not. Take, for instance, their growing crops of corn. All might be most luxuriant and promising; but in an hour, from one of those awful and devastating storms of hail which were not unfrequent in this country, all, or the greater part, might be swept away, and ruin look the farmer in the face. However, in recent years, means were placed within the reach of the farmers to save themselves from losses in this way, and he could not but recommend his friends and neighbours to do what he and many others had done—insure their crops against damage by hail. The rates were trifling, and he was sure that their friend, Mr. James Pike, the agent to the Royal Farmers' Hail Insurance Company, whom he was happy to see present—would be most ready to asssist farmers in availing themselves of the advantages which that institution offered. In reference to the subject of the improvement of agricultural labourers, it was one that demanded attention, and he hoped for the time when every owner of an estate would be determined to have such cottages only as would ensure the comfort of, and promote decency among, the labouring classes."

And then Mr. Belcher took Mr. Bourn with his own weapons, and quoted Cowper on the other side; while the Chairman (Mr. Hicks) brought the business of the evening to a close, with a few remarks that went to say, "no set of men employed so much money, and had so little reward for their toil and care, as the farmers."

There are, we are afraid, a good many people too apt to think with Mr. Bourn as to the realities of a farmer's life—that it is a delightful do-nothing-but-what-you-like sort of business, with lots of duties and no rights, and that home-cured bacon is a very good thing for breakfast. For our own part we are quite convinced that farming is becoming every day more of a business, and that no man leads a more useful life than the farmer does. We are certainly losing a little of the poetical association:—the hawthorn hedge and the tegmine fagi are coming to be gradually lopped of their fair proportions. Even the home-made comforts are now by no means a rule. We were at the house of a famous farmer not long since, whose home-made bread came from the baker's, and his glass of beer from Guinness's agent.

"The Farmer's Life and Duties" will bear some further discussion another day. Say with a little more of the steam engine, and a little less of Kirke White and Co. for the material.

"THE IMPROVEMENT OF THE DWELLINGS AND DOMESTIC CONDITION OF AGRICULTURAL LABOURERS."

In the last published of our articles on "Agricultural Education", we adverted to an association in Scotland having for its object the furthering of the above important movement; and promised in a future article to glance at its constitution, aims, and the practical results which have been attained after a three years' existence and labour: that promise we now propose to redeem.

In our articles above alluded to, we ventured pretty fully to press upon the attention of our readers the importance of the improvement of the dwelling-places of agricultural labourers, convinced that in so doing we were pointing out a powerful agent for greatly promoting the physical no less than the moral condition of their inhabitants. A belief in this great truth formed the actuating motive of the promoters of the Association, comprising all the wealthy and influential noblemen and gentlemen of Scotland, and is well and clearly stated in the "resolutions" proposed at its first meeting, and which form the basis on which the Association grounds its claims for support, alike on the philanthropic landlord anxious for the moral elevation of his tenantry, and of him who is careful only to get the most work out of his workpeople, the "living tools" of his farms. These resolutions, suggestive as they assuredly are of practical truths, we here give: (1) "That in the opinion of this meeting no material improvement in the character and habits of the labouring population can be expected, unless they are supplied with sufficient house-room, and means of domestic comfort and decency; and that the condition of the agricultural labourers in those respects is lamentably deficient throughout a great part of Scotland." (2) "That it is the especial duty, as well as the interest of the owners and occupiers of land, to remedy this defect, and to provide adequate accommodation for their farm labourers; and that a strict fulfilment of this duty would not only tend to maintain the physical powers of the workman in fuller efficiency than at present, but would encourage him in the cultivation of superior habits, and remove one of the acknowledged sources of immorality and vice in the rural districts." (3) "That there is reason to believe that in many cases improvement has been delayed, from ignorance of the real extent of the evil, from uncertainty as to what is required for the proper accommodation of country labourers, and from want of information as to the best and cheapest way of providing it; and that although much good has been done, by the exertions of the Highland and Agricultural Society, in promoting the improvement of cottage dwellings, it is expected that more comprehensive and systematic means should now be adopted for directing attention on the part of proprietors and tenants to the great deficiency that still exists, and for aiding them in their efforts to supply it." With these views the society was constituted, having for its object the holding of periodical meetings; the establishment of an office in Edinburgh, where plans, models, and specifications of buildings and fittings could be deposited and consulted; and the adoption of such other means as might be found expedient to promote the construction of suitable dwellings and domestic accommodations of the agricultural labourers of Scotland. The Association has been now three years in existence, and from the published reports of its directors we propose to glean some information as to the practical results which have followed from its formation.

From the very commencement of their labours, the directors were impressed with the importance of one of their "regulations"—one which it would be well for similar institutions to bear in mind—that, "in order to be really useful, the Association must be practical, not speculative; cautious, not obtrusive." That this principle—so far, at least, as the first part is concerned ("practical, not speculative")—has been well acted up to, a very brief glance at the three reports* suffices to show. To the First Report an Appendix is added, containing "A few Practical Hints on Cottage-building," with engraved plans, and a general specification. To the Second and Third Reports a supplementary report is added, with numerous woodcuts and plans and specifications; these being prepared by Mr. Wm. Fowler, Architect to the Association. The practical nature of these may be gathered from one fact—that in numerous instances have they been carried out, with marked satisfaction to all concerned. At some of the useful hints of Mr. Fowler we propose hereafter to glance. In addition to a large circulation of these plans and practical suggestions, through the medium of the annual reports, further publicity has been given to them in the form of separate sheets, five in number, the price of each of which is 2s. 6d. The sale of these, we are glad to learn, has been very encouraging, not only in Scotland, but in England. These sheets contain the most approved designs for labourers' dwellings, and furnish, through the medium of schedules of measurements, facilities for obtaining accurate estimates of the cost of erection. In preparing these plans, the directors and their architect had one point always in view—namely, that "three separate apartments are the minimum accommodation for a labourer's family." In their Second Report they emphatically repeat this axiom, as it may be called, stating that the accommodation stated in it is the very least that ought to be afforded "for a proper division of the sexes in a labourer's family—a matter so absolutely necessary to be provided for, in promoting any social improvement among the peasantry." This point cannot be too strongly urged upon the notice of those who are contemplating the erection of cottages for their labourers: it is folly to expect a high standard of morality amongst the peasantry, when everything in their household arrangements is calculated to lower it. On this point the Duke of Buccleugh, at the initiatory meeting of the Association, made some apposite remarks. "How can you expect," he asked, "that, where men, women, and children are all huddled together in one apartment or two apartments, it should be otherwise than that the delicacy of feeling which ought to exist is destroyed? I have been told so by the people themselves, and have known it in England, where complaints have been made to me that the cottages did not afford sufficient accommodation. One mother said to me, 'How can I bring up my daughters in respectability and with proper feelings, when we are all obliged to live together in such close contact, and without that separation which there ought to be?'" Knowing well the evils which arise from the crowding together of sexes in one apartment, we are glad to see the stand which the Scottish Association is making on this point, of having separate accommodation for separate branches of the family.

In all movements of social reform—and in none, perhaps, is it more noticeable than in the movement now under notice—the question of cost—"Will it pay?"—obtrudes itself forcibly; sometimes so much so, that it excludes all other considerations, and the success or non-success of the movement is decided by this alone. The directors of the Association, in their Second Report, endeavour to place this matter on what we consider its proper basis. "They cannot profess," they say, "to give plans for cottages having all the requisites for comfort and social decency at a commercial remunerative per-centage on the outlay of their erections; and they are confident that, where such is insisted on, these humane provisions must to a great degree be sacrificed. But the directors do profess to afford directions for building cottages, where a plain style is adopted, which shall embrace all these, and yet yield such a per-centage on the outlay as, with a corresponding increase of the efficiency of their occupants as labourers, will prove highly remunerative to both landlord and farmer." That this is the right, the just way to view the matter, we are confident. Other considerations than the mere pecuniary ones must be taken into account, in endeavouring to strike a fair balance. But even taking the lowest ground, and judging the whole matter by the standard too often applied in such cases—the money standard—we apprehend that if the operation is gone rightly about, and nothing left to haphazard conjecture or weak incompetence, that houses with arrangements tending to promote decency and self-respect amongst their inhabitants will pay as well—nay, better than those in which everything is calculated to demoralize. And it is just in this way that the operations of the Association have such a high practical value. They do not come between the landlord, the tenant, or the labourer, with " aught that is dictatorial or of an inquisitorial kind as regards their social relations," but confine themselves simply to the dissemination of minute and detailed information, and awaken the attention of those connected with rural affairs to the practical importance of its principles. What those principles are, we have already pointed out; and on such a basis would we heartily rejoice to see similar associations founded in the principal districts of this country. Although unquestionably behind their English brethren in their notions of household "tidiness" and thrifty housewifery, it it a mistaken idea to suppose that amongst the Scottish peasantry only, is to be found that degraded and demoralized domestic condition to which in our various articles we have so frequently alluded. Useful among the glens and hills of "auld Scotland" as the " Association for promoting Improvement in the Dwellings and Domestic Condition of Agricultural Labourers" undoubtedly is, and although having *unfortunately* a field so wide for its labours, no less useful would such an association be amid the vales of " merry England", nor less wide the field in which it might prosecute its labours. Happy indeed would be the condition of our peasantry, if no such labours were demanded from those set over them. R. S. B.

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* Printed for the Association, by William Blackwood and Sons, Edinburgh.

THETFORD WOOL FAIR.

This important gathering of the agriculturists of Norfolk and Suffolk took place on Friday, July 10, at the usual place, the Bell Inn, Thetford. The fair was founded many years ago by the father of Norfolk agriculture, the late Earl of Leicester, and the *locus in quo* was judiciously selected, as it stands on the boundaries of Norfolk and Suffolk. The chairman is selected alternately from the two counties, and this year Norfolk supplied a president in Mr. Anthony Hamond, of Westacre, a gentleman whose services to the agricultural cause, genial humour, and frank straightforward manners have ensured him a wide and well-deserved popularity. The large room at the Bell was well filled, and among the immediate supporters of the chairman were Mr. H. B. Caldwell, Hilborough; Mr. H. E. Blythe, Burnham; Capt. Caldwell; Mr. H. W. Keary, Holkham; Mr. Woods, steward to Lord Walsingham; Mr. W. Bagge, late M.P. for West Norfolk; Mr. S. Abbott; Mr. W. P. Salter; Mr. C. Overman, &c. Among the wool-buyers present may be mentioned the names of Messrs. Robertshaw, Bradford; B. Gurney, London; Moyse, King's Lynn; Sherringham, Fakenham; Pymar, Norwich; Higgs, Sudbury; Thompson, London; Fawcett; Everard, &c.

The chairman offered an example, in proposing the usual loyal and complimentary toasts, which might be followed with advantage in similar meetings. The honourable gentleman was extremely concise in his remarks on these topics, and his audience were also extremely forbearing, as they only indulged in the course of the sitting in two broadsides of "three times three." At the same time the toast-list was well ballasted as usual with "The bishop and clergy of the diocese," "The army and navy, and may their services in times of war be not forgotten in times of peace;" "The members for Norfolk and Suffolk," &c. In proposing the health of the "Prince Consort," the chairman referred to the speech delivered by his Royal Highness at the recent educational conference. The sentiments expressed by Prince Albert on that occasion were echoed by all employers of labour; but there were great difficulties connected with the subject. How, for instance, were parents to be supplied with the wages now earned by their children, and how was the labour now supplied by young hands to be made good? If England was to prosper as an agricultural country, the farmers must get rid of their weeds, they must have the assistance of the smaller hands, and a prosperous and contented class of labourers. If the wages of the children of the latter were to be abstracted, he did not see how they would get on; and if young labour was to be taken from the farmers, he did not see how they were to keep their fields clear from poppies and rubbish (Hear). In approaching the business of the evening, Mr. Hamond noticed the animation with which the collectors of wool were driving about the country with the view of making purchases. Formerly the farmers went to the wool-buyers and asked them to purchase their wool; but the tables were now turned, and he had actually seen two or three buyers canvassing the farmers as actively as possible. This was an extremely favourable symptom, and he would call upon Mr. Keary to "open the ball," as usual, by offering Lord Leicester's wool.

Mr. KEARY said he thought he might congratulate the wool-growers on very good prospects indeed. At some meetings there had been great difficulty in ascertaining the value of wool, as there was great difference of opinion between the buyers and the growers. On the present occasion, however, there seemed to be no difference at all. As the chairman had remarked, the wool collectors were driving furiously about the country buying wool in all directions; and, if reference were made to the sales which had already taken place, it would be found that an increase of 5s. or 6s. per tod had been realized at every market. There were several reasons, into which it was not necessary for him to enter, why wool had thus risen in price. The scarceness of cotton and silk had probably something to do with it. At any rate wool was eagerly sought for, and such being the case he thought he might fairly ask a higher price than was given in the room last year. He had no hesitation, in offering Lord Leicester's wool to Mr. Sherringham, in saying that it was of the first quality and that it had been fairly treated. The quantity was 65 tods of ewe, 75 tods of Down hogg, 40 tods of Down half-bred—all bred upon the Holkham estate—and 100 tods of bought wool. He would offer it to Mr. Sherringham at 48s. per tod all round.

Mr. SHERRINGHAM said the wool was in the best possible state, and as he never had occasion to repent his previous bargains with Mr. Keary, he accepted his offer (Cheers).

Mr. BAGGE, in complimentary terms, proposed the health of the chairman, which was drunk with three times three.

The CHAIRMAN, in responding, said the fair was a peculiar hobby of the late venerable Earl of Leicester, and it was no doubt of great importance formerly to the district. Times, however, now were strangely altered. When collectors were inclined to come forward and buy like men, he particularly advised the farmers to sell the article they had to dispose of, because the collectors must have their profits and must have their wants supplied. If they all became speculators in wool a great many of them would very likely get a rap on the knuckles. As for his own wool he would offer it to Mr. Sherringham at 48s. per tod all round; it had not been weighed, but it consisted of 940 fleece of half-bred hogg, 441 of Down hogg, and 841 of Down ewe. Addressing Mr. Sherringham, Mr. Hamond observed, amid considerable laughter, " Sir, I pause for a reply."

Mr. SHERRINGHAM said he would give one. He could not complain of the quality of the wool, but, with regard to its condition, he thought there was a difference, comparing it with Lord Leicester's, of fully 2s. per tod. He must, therefore, decline the offer which the chairman had made.

The CHAIRMAN, remarking that he meant to sell at 48s. per tod, proposed the health of Mr. Blyth (cheers).

Mr. BLYTH responded, and offered his wool—95 tods of ewe, and 72 or 73 tods of hog—to Mr. Sherringham at 46s. per tod.

Mr. SHERRINGHAM offered 45s.

Accepted (cheers).

The CHAIRMAN proposed Mr. Sherringham's health.

Mr. SHERRINGHAM shortly responded, and, adverting to his long connexion with the Fair, stated that, although he entered during the month his 77th year, he continued to enjoy good health and spirits.

Mr. H. GAYFORD offered his wool—70 score fleeces of ewe, and 5 score of hog—to Mr. Higgs, at 40s. per tod. Mr. Gayford added that, while Mr. Higgs was considering his figures, he would propose the health of Mr. Bagge, who had served West Norfolk faithfully and honestly in Parliament for many years (three times three).

Mr. BAGGE having shortly responded,

Mr. HIGGS declined Mr. Gayford's offers. Eventually, however, he agreed to divide the difference of 1s. per tod which existed between Mr. Gayford's price and his offer, and to take the wool.

Capt. CALDWELL offered Mr. Baring's wool—6,400 fleeces of ewe, and 100 of hogget, all down, to Mr. Moyse—at 44s. per tod.

Mr. MOYSE declined the offer.

Mr. WOODS, in offering Lord Walsingham's wool, said, two years since, Mr. Sherringham had bid a price for it considerably below that at which Lord Leicester's had sold. Mr. Sherringham afterwards came to look at it, and said, if Lord Walsingham expected his wool to realize its full value, it must be washed better. Since then, he (Mr. Woods) had used 3lb. of soft soap, boiled in two gallons of water, to every score of sheep. The sheep were washed in a tub with a false bottom—in other words, there was one bottom above another. After washing three-score sheep, the false bottom was removed, and the water thrown out; and the space between the two bottoms was always found to be filled with sand. He was now able to offer Lord Walsingham's wool at as high a price as Lord Leicester's; indeed, he should be inclined to ask more, if he did not feel delicacy in infringing what appeared to be Lord Leicester's privilege of commanding the best price (a laugh). It was important to know that the weight of the wool was not reduced by the washing. Mr. Sherringham, who saw the wool on Monday, was very much surprised at the size of some of the ewe-hog fleeces; and they were found to weigh, on an average, 6¼lb. The ewe fleeces had since been found to weigh, on an average, a little above 5lb. He begged to offer the wool—24 score fleeces of ewe, and 12 score fleeces of hog—to Mr. Sherringham, at 48s. per tod.

Mr. SHERRINGHAM said, when he first saw Lord Walsingham's wool, it was as filthy as anybody's. It had since greatly improved; and in order to encourage Mr. Woods, he would accept his offer (cheers).

" Agriculture, manufactures, and commerce."

Mr. ROBERTSHAW said, at previous meetings he had sometimes, for speaking "right straight out," got the wrong side of the hedge. He meant, however, to follow the same course now. Nothing at all had been heard about Yorkshire, and the difficulties and troubles of her inhabitants. He was himself on the look-out for cheap wool wherever he could find it, but the proceedings of the market that day had taken the wool-buyers by surprise. The stock of wool of certain classes had been comparatively worked up, and there was therefore an inducement to buyers to seek after these classes; but when they had once got what they considered a working supply they would not be so troublesome. Mr. Robertshaw expressed, *en passant*, his hope that the day was not far when the farmers would send their wool to market in better condition. The wool-buyers would then be able to do what they were doing that day, viz., to give a first-rate price for it.

The CHAIRMAN expressed thanks to Mr. Robertshaw for his observations, and proposed the health of that gentleman and other buyers from the north of England who attended the fair.

Mr. GURNEY responded, and adverting to the use of soft soap in cleansing wool, said, soft soap entered so largely into the transactions between buyer and seller that he intended to lay in a sufficient stock to last till next year (loud laughter).

Mr. MILES HAMOND offered 380 tods of hogget and 25 tods of ewe wool to Mr. Sherringham at 46s. per tod.

Mr. SHERRINGHAM offered 45s.

Mr. HAMOND suggested that Mr. Sherringham should see the wool.

Mr. S. ABBOTT offered 1,020 fleeces of half-bred hog and 220 fleeces of ewe to Mr. Sherringham at 48s. all round.

Mr. SHERRINGHAM declined.

Mr. ABBOTT made the same offer to Mr. Moyse.

Mr. MOYSE declined.

Mr. GAYFORD offered 100 tods of ewe and 30 tods of Down hog to Mr. Higgs at 62s.

Mr. HIGGS declined.

Mr. NUNN offered 23 tods of half Leicester, 17 tods of Down hog, 34 tods of half Leicester fat sheep, and 78 tods of Down ewe, to Mr. Everard at 44s. per tod all round.

Mr. EVERARD offered 42s.

Mr. NUNN declined and offered the parcel to Mr. Hitchcock.

Mr. HITCHCOCK declined the offer, and remarked upon the high price which the wool offered by noblemen had commanded.

Mr. NUNN said he lived very near a nobleman; perhaps that might have something to do with it (laughter).

Mr. BLYTHE said he was commissioned by Mr. R. Overman of Egmere, to offer his wool, 1300 fleeces of half-bred hog, 200 of Down hog, and 400 of Down ewe, to Mr. Sherringham at 47s. per tod.

Mr. Sherringham declined.

Mr. C. Overman (Harling) offered 52 tods, including 7 tods of hogget, to Mr. Sherringham at 42s.

Mr. Sherringham declined.

Mr. Beck proposed the health of Mr. Caldwell. (Cheers.)

Mr. Caldwell responded, but confined himself simply to the expression of his thanks.

Mr. Burroughes offered Mr. Hitchcock eight score hog fleeces, and six score ewe fleeces at 44s. per tod all round.

Mr. Hitchcock offered 42s.

Mr. Burroughes offered his brother's wool—three score half-bred Leicester hoggets, two score black-faced ewe hoggets, and nine score of ewes, to Mr. Everard at 44s.

Mr. Everard declined.

"The Yeomanry of Norfolk and Suffolk."

Mr. G. Gayford and Mr. W. Beck responded. The latter gentleman offered his wool, 20 tods of ewe, 45 tods of Down hog, and 10 tods of half-bred hog, to Mr. Sherringham at 48s.

Mr. Sherringham declined.

Mr. Place offered 100 tods of ewe and 5 tods of hog to Mr. Overall at 40s.

Mr. Overall offered 38s.

Mr. Higgs offered Mr. Overall 100 sheets of good clean-bred ewe at 41s. per tod. He did this to test the value of wool.

Mr. Overall said he would give 40s.

No further offer being made, a few other formal toasts were drunk, and the company adjourned to the yard below. Here business was resumed, the public proceedings being considered, curiously enough, as only useful in giving a tone to the private transactions below.

TRIAL OF BOYDELL'S TRACTION ENGINE.

A considerable portion of the company attended in the course of the evening an exhibition of Boydell's engine and endless railway, for ploughing by direct traction. The exhibition took place in a field near the railway station, and two engines were on the ground, one 7-horse, and the other of 10-horse power. The smaller engine was an ordinary portable agricultural one, fitted with an endless railway apparatus, and capable of self-propulsion by means of a kind of strap-chain. The credit of this useful adaptation of Boydell's ingenious invention to the existing agricultural engine is due to Mr. Burrell, of the St. Nicholas's Foundry, Thetford, by whom both the engines on the ground were constructed. The engines snorted and clamped over the land—which was, like all that in the neighbourhood, a light friable soil, in a very dry state—at a good round pace; but they were obliged to reduce their speed in turning round, and to take a good wide sweep to effect that object. The furrows in the body of the field were straight and regular, and equally good ones could be probably made by cross journeys at each end, although the action of the ploughs seems to be defective wherever it is necessary to make a sharp turn. The general result was, however, decidedly satisfactory, and in the words of an observer, whose opinion is entitled to considerable weight, "The only question is, will it pay?" It should be stated that the seven-horse engine dragged after it one double plough, thus effecting the work of four horses; while the ten-horse engine supplied a sturdy onward motion to three double ploughs (Burrell's construction), thus playing the part of twelve horses. The presence of a driver and a steersman on each engine, in addition to a man at each plough, is also an element which should be taken into consideration.

Mr. Boydell, the painstaking inventor of the apparatus, was on the ground; and some idea may be formed of the sacrifice of time and money which he has made in bringing his plans to perfection from the circumstance—reported among the visitors—that he has expended £15,000 in developing his ideas. The placing upon the wheels of the engines the great flapping masses of wood and iron upon which the endless railway is fitted, may seem at first a simple matter; but the minute difficulties to be overcome must have been very great, and the solution of the question of the steerage must have been especially embarrassing. Our readers will, therefore, be glad to hear that there appears to be some probability that the engines will gradually be brought into use. Four of them have been already constructed by Mr. Burrell, the only implement-maker we believe who is devoting his attention to them; and a fifth, of ten-horse power, is now in the St. Nicholas workshops, and will be exhibited at the Salisbury meeting of the Royal Agricultural Society. One of the four engines completed, of twenty-horse power, has been purchased by the Government, and is about to be despatched to Woolwich. It should also be added that on Friday Mr. Burrell was favoured with a visit from General Menlikoff, an agent of the Russian Government, who inspected the details of the invention for the information of the ruling powers at St. Petersburgh. One of the first engines constructed was sold to the Russian authorities, but was lost in the Gulf of Finland.

The scene which the exhibition of Friday evening presented was a highly suggestive one. Below the field in which the engines literally "ploughed their way," the rushing trains of the Eastern Counties Railway proclaimed the full development of the locomotive. Immediately before the eye of the visitor was a new application of the same power, crude perhaps in its details, but tolerably complete in its results—an apparatus which time may perhaps mature into a rival of its more perfect prototype. In the background were the grey old ruins of a former age, the productions of men who would have shrunk, perhaps, with horror from the running to and fro and increasing knowledge of those who have succeeded them on the stage of life.

PROFITABLE CROSSING OF LINCOLN AND LEICESTER SHEEP.

Sir,—I am now at Brigstock, in North Northamptonshire, where some of the most eminent graziers say that the Lincolnshire sheep, judiciously crossed with the Leicester, upon all land where clover and turnips can be produced, are second to no sheep in England for profit; as the Leicester gives the proper cast or mould, and feed at early maturity, and the Lincoln gives a heavy coat of wool, adds stamina and increases the size and weight of mutton over and above the pure-bred Leicester. One of the best farmers here wisely says we ought to try to obtain a breed of sheep off a Bakewell or Leicester frame, with a heavy coat of Lincolnshire wool on their backs, to enable them to bear the cold, cutting, bleak north-east winds better than light woolled sheep, which appears like common sense and reason; as the heaviest-coated sheep will bear the cold the best, and the light-coated sheep will bear the heat the best; therefore the heavy woolled sheep are the best for a cold climate, and the light-woolled sheep are the best for a hot one. The experienced and practical farmer says, "Shear your heavy-woolled sheep before the sun gets too hot, and not let the heat of the sun waste their fat flesh by sweating them excessively."

Brigstock, near Thrapston, June 20. S. Arnsby.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

At a WEEKLY COUNCIL, on Wednesday, the 24th of June, present, Mr. Raymond Barker, V.P., in the chair, Lord Bridport, Sir John V. B. Johnstone, Bart., M.P., Mr. Hodgson Barrow, M.P., Dr. Camps, Col. Challoner, Mr. Eliot Fuller, Mr. Brandreth Gibbs, Mr. Glegg, Mr. Fisher Hobbs, M. Kropp (of Hanover), Mr. Majendie, M. Müller (of Hanover), Mr. Pain (Mayor of Salisbury), Mr. Scott, Mr. Vyner, Mr. Wilson (of Stowlangtoft), and Mr. George Wood.

Mr. Curtis favoured the Council with a letter on the subject of the ravages committed by insects on the Mangold crops of Mr. Paget, M.P., and referred the members to his detailed natural history of insects affecting that crop published in the Journal (vol. viii., p. 399).

Mr. Brotherton submitted to the inspection of the members several Flax-plants, as specimens of a mode of promoting the germination of the seeds and the growth of that plant, which, in his opinion, would prove advantageous to the development of a larger amount of fibre of fine quality.—Mr. Scott remarked that the proposed plan of encasing and dibbling the Flax-seed would not tend to that economy of labour so much required in the management of that crop.

Mr. Lister Maw transmitted a malformation of fatty matter found in a sheep; which was referred to Prof. Simonds for his report.

Adjourned to July 1.

A MONTHLY COUNCIL was held on Wednesday, the 1st of July, present: Colonel Challoner, trustee, in the chair; Earl of Powis, Lord Bridport, Sir Edward Hulse, Bart., Sir Charles Gould Morgan, Bart., Sir Archibald Keppel Macdonald, Bart., Mr. Raymond Barker, Mr. Barnett, Mr. Hodgson Barrow, M.P., Mr. Cavendish, Mr. Druce, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Wren Hoskyns, Mr. Hudson (of Castleacre), Mr. Jonas, Mr. Milwood, Mr. Pain (Mayor of Salisbury), Mr. Pope, Mr. Simpson, Mr. Robert Smith, Colonel Towneley, Mr. Vyner, Mr. Jonas Webb, Mr. Burch Western, and Mr. Wilson (of Stowlangtoft).

Lord Southampton, of Whittlebury Lodge, Northamptonshire, was elected a Governor of the Society.

The following new members were elected :—
Beach, Joseph, Flower Mill, Dudley, Staffordshire.
Bircham, William, Dunton, Fakenham, Norfolk.
Bourne, William, Atherstone, Warwickshire.
Butcher, W. Bowling Green Farm, Ewell, Surrey.
Dods, T. P., Anick Grange, Hexham, Northumberland.
Elvidge, Benjamin, Leven, Beverley, Yorkshire.
Evans, Griffith, Bridgenorth, Shropshire.
Howard, Charles, Biddenham, Bedfordshire.
Lattimore, C. H., The Place, Wheathampsted, Herts.
Lindsell, Lt.-Colonel, Fairfield House, Biggleswade.
Middleborough, J. R., South-Milford, Milford-Junction, Yorkshire.
Pike, Aaron, Mitton, Tewkesbury, Gloucestershire.
Pointon, George, Mere Cottage, Lawton Cheshire.
Preston, Thomas, Scosthrop House, Hellifield, Yorkshire.
Shaw, John, Huntsbury Hill, Northampton.
Stephens, S. Lyne, Lynford Hall, Brandon, Norfolk.
Valpy, Robert Harris, Enborne, Newbury, Berkshire.
Wheeler, J. Cotton, Salisbury.
Whitehead, Gervase, Teffont, Salisbury.
Wilson, John, Bay View, Berwick-on-Tweed.
Wilton, James, The Canal, Salisbury.
Wood, Rev. Leonard Charles, Singleton Lodge, Kirkham, Lancashire.
Wynniatt, Reginald, Dymock Grange, Gloucester.

PRESIDENT.—The Right Hon. the Speaker addressed to the Council the following letter, which on the motion of Mr. Raymond Barker, seconded by Mr. Milward, was ordered to be placed on the minutes :—

> "House of Commons, June 5, 1857.
>
> "Dear Sir,—I beg you will communicate to the Council my sincere acknowledgments for the resolution unanimously passed at the meeting of June 3, requesting me to withdraw the offer of resignation of the office of President, and conveying to me the cordial thanks of the Council for my exertions to promote the objects and welfare of the Society since the period of my appointment.
>
> "It is a matter of infinite regret to me that I shall not be able to attend the show at Salisbury, and that anything should have occurred, however honourable to myself, which prevents my devoting a full measure of time and attention to the affairs of the Society during the period that I have the honour to hold the office of President.
>
> "I am much gratified by the assurance that my conduct in that office has received the approval of the Council; and I beg to offer my respectful and grateful thanks to every member of the Council for the friendly and cordial support which I have at all times experienced at their hands.
>
> "Believe me, yours faithfully,
> "(Signed) J. EVELYN DENISON.
>
> "J. Hudson, Esq."

The Council then resolved unanimously that his Grace the Duke of Richmond, as one of the past Presidents of the Society, should be requested to undertake the Presidential duties at the Salisbury Meeting.

FINANCES.—Mr. Raymond Barker, Chairman of the Finance Committee, presented the monthly report on the accounts; from which it appeared that the current cash-balance in the hands of the bankers on that date was £989. Agreeably with the recommendations of the committee, Messrs. Everett and Pickney, of Salisbury, were unanimously appointed the local bankers of the Society during the period of the ensuing country meeting.

PRIZE REPORTS.—Mr. Wren Hoskyns reported from the Journal Committee a recommendation, which the Council adopted, that prizes should be offered by the Society for Reports on the Farming of Shropshire and the Channel Islands.

Steam-Cultivators. — On the motion of Mr. Fisher Hobbs, seconded by Mr. Jonas Webb, the Council decided that, in order to give a full and efficient trial of the steam-cultivators at Salisbury competing for the Society's undivided prize of £500, the offer made to them of 38 acres of suitable land for that purpose now under clover, in the immediate neighbourhood of Salisbury, should be accepted on the terms proposed, namely, at £190. The Mayor, at the request of the Council, undertook the charge of seeing every preparation duly made, not only for the trials by which this class of implements will have the opportunity of being thoroughly tested, but also for the arrangements by which the public may have free admission to the ground, and be enabled most conveniently to witness the trials.

Judges.—Sir Archibald Macdonald, Bart., Chairman of the Judges' Selection and Recommendation Committees, presented reports recommending the judges respectively required in the departments of Live Stock and Implements at the ensuing Salisbury meeting. These reports were unanimously adopted by the Council.

Stewards.—On the motion of the Mayor of Salisbury, seconded by Mr. Jonas, Mr. Philip Pinckney Cother, of Salisbury, was unanimously appointed the steward of poultry for the ensuing country meeting; and on the motion of Mr. Wren Hoskyns, seconded by Mr. Milward, Colonel Towneley, of Towneley Park, Lancashire, was unanimously appointed steward-elect of implements for the same occasion.

Dinner.—On the motion of Mr. Milward, seconded by Mr. Simpson, the Council accepted the offer made to them by the Mayor and Corporation of Salisbury, of the Council Chamber in the City, for the purpose of a dinner on the Wednesday of the week of meeting; and gave power to the Salisbury Committee of the Society to carry out the requisite details.

Water Meadows.—The Mayor of Salisbury reported that he had completed the arrangements referred to him by the Council, by which the farm-husbandry and plan of irrigation in the neighbourhood of Salisbury might be inspected by the members on the occasion of the ensuing country meeting. The Hon. Sidney Herbert had placed his Home Farm at the disposal of the Society, and Messrs. Rawlence and Squarey were prepared to offer every facility in their power for rendering the inspection of the Water-Meadows in their occupation interesting and instructive to the members, both personally on the meadows themselves, and afterwards by the delivery of a lecture by Mr. Squarey on the details of their construction, management, and advantages. It had been proposed that the visitors should meet at Wilton Park at twelve o'clock on Tuesday, or on such other day of the week as might be arranged and published in the programme.

Special Council.—The Council ordered, agreeably with the bye-laws, that a Special Meeting should be held on the following Wednesday at one o'clock, for the final settlement of all details connected with the Salisbury Meeting, in order that the programme might be completed and published.

Adjourned to the Weekly Meeting at 12 o'clock on July 8.

A Weekly Council was held on the 8th of July; present, Colonel Challoner, Trustee, in the Chair, Earl of Powis, Lord Berners, Lord Walsingham, Count Esterhazy, Hon. A. Leslie Melville, Sir Charles Morgan, Bart., Sir John V. B. Johnstone, Bart., M.P., Sir Archibald Macdonald, Bart., Mr. Aytoun, Mr. Raymond Barker, Mr. Hodson Barrow, M.P., Mr. Chadwick, Mr. J. Hodgett Foley, M.P., Mr. Eliott Fuller, Mr. Brandreth Gibbs, Mr. Jon. Gray, Mr. Fisher Hobbs, Mr. Manning, Mr. Mundy, Mr. Pain (Mayor of Salisbury), Mr. Parkins, Mr. Allen Ransome, Mr. Scott, Mr. Smallbones (of Hungary), Dr. A. Thompsom (U. S.), Colonel Towneley, Mr. Trimmer, Mr. Tyler (U. S.), Lieut. Uggla (of Sweden), Mr. H. Uggla (of Sweden), Mr. Vyner, Mr. Jonas Webb, Mr. Burch Western, Mr. Wilson (Stowlangtoft), and Mr. Maitland Wilson.

Pacific Guano. — Professor Way transmitted a report on his chemical investigation of the samples of guano from islands in the Pacific, forwarded by Mr. Rowlandson to the Foreign Office, from which it appeared that the guano in question contained only one-half per cent. of ammonia, and was, in Professor Way's opinion, of comparatively small value, entirely dissimilar to the produce of the Chincha Islands, and not worth the expense of importation into this country.

Madrid Meeting.—A letter was read from the Board of Trade, announcing that an Agricultural Exhibition would take place this year at Madrid, and enclosing a list of the prizes offered; among which are those for English cattle, horses, sheep, and pigs, of pure or mixed breed.

Messrs. Cartwright, of Clarendon Terrace, Newington Green, submitted specimens of a manure constituted of animal gelatine and earthy matter; and Messrs. Chissnell and Son, of Colchester, transmitted a specimen of their Giant Rye.

Special Council, *July* 8. — Colonel Challoner, Trustee, in the chair, at which details connected with the arrangements of the ensuing Salisbury Meeting were taken into consideration, and instructions issued in reference to their completion.

The Council stands adjourned to a special meeting at Salisbury, on Friday, the 24th of July.

ROYAL AGRICULTURAL SOCIETY'S MEETING AT SALISBURY.

PRELIMINARY PROCEEDINGS AND FIELD TRIALS.

Whether or not the City of Salisbury may be the best place in the "District" of Wilts, Hants, Dorset, and Somerset, that could be chosen for the Society's great gathering, it is plain that it offers great facilities for a successful meeting. Consider its central position. Within a thirty-mile radius are included the important towns of Shaftesbury, Sherborne, Blandford, Wimborne, Poole, Christchurch, Ringwood Lymington, Ramsey, Southampton, Winchester, Stockbridge, Andover, Hungerford, Melksham, Devizes, West bury, Warminster; while a fifty-mile radius will embrace also, Bath, Bristol, Wells, Bridgewater, Taunton, Yeovil, Bridport, Dorchester, Weymouth, Portsmouth, Chichester, Guildford, Basingstoke, Reading, Oxford, Cirencester, Stroud. Then as three converging railroads connect the city with different points of the two great lines—the Great Western and South Western—all the south coast, all the extreme western counties, the great midland districts, and the populous metropolitan counties, are in direct railway communication with the place of the Show.

One of the best features of the arrangements made by the Society and the Local Committee consists in the excellent preparation of the trial grounds for the implements, reapers, and steam cultivators.

A little beyond the show-yard is the field of eight acres, in which the reaping machines are tried; and the crop of rye has been purposely sown and cultivated, so as to present strips in different stages of growth and of varying degrees of cleanliness. Adjoining this field, and adjacent to the show yard, is the land upon which Mr. Fowler displayed the capabilities of his steam plough.

The drills, horse-hoes, haymakers, &c., have another field for their performances, situated on the Laverstock-road, about three-quarters of a mile in a direct line from the city. This land, comprising about twenty-two acres, has been managed so as to secure various portions in the right condition for the operation of the different implements: an arrangement which is of the greatest value and importance for the rightly testing of the numerous competing "inventions" and established machines.

As at Chelmsford, so here, the steam-thrashing-machines, mills, cutters, and other machinery in action, form a highly attractive department of the exhibition.

We give our readers some little scrap from our notes by the way. Leaving London by the 5 o'clock train, and rapidly passing along, it appeared a long time before we got really clear of the great metropolis. The country soon presented a very pleasant and fruitful aspect; but ere long we came into districts anything but inviting, which continued more or less so for nearly forty miles along our route. Why such barrenness should yet remain near to *two millions and a-half of human beings* we could not divine. Certainly we have seen land equally poor brought into admirable cultivation. We saw it as we passed to Lincoln—we saw it as we passed to Carlisle—we saw it as we passed to Chelmsford. Why the south-country folks are so far behind the times it is for them to explain. As to stock, we only noticed a few Guernseys for milking, and one or two other *horned* animals, all the way down. As to sheep, we should say there is not a tenth of what there ought to be; sometimes we passed on for miles together without seeing *one.* The crops are by no means enviable as a whole; a few plots looked prosperous, but generally they were thin and light. We thought the system bad, there being too much land under corn crops, and but little under grass seeds. What appears to be the great requisite is plenty of sheep. These sheep should be grazing with all the adventitious aid that corn and cake can give them. It is said, "It won't pay." We do not believe it. The corn crops will pay for higher management; the turnip crop will pay for it. It is a course of continued progression; and the more of artificial aids thus given, the more will the occupier reap its benefits. If the migratory habits of our great society shall tend this year to urge on our southern brethren to renew their energy, enlarge their views, and open their practice, its visit here will be amply effective. We earnestly wish our south-country friends may long enjoy the advantages this visit is intended to confer upon them.

On Friday the real business of the exhibition commenced. The implement judges began their duties about 9 o'clock; Messrs. Caldwell and Druce, Rowley and Chalcroft, Owen and J. Clarke, Reed and King, taking their respective classes of implements; with Messrs. Amos and Owen as the consulting engineers. The trials consisted of the classes of drills, manure distributors, horse-hoes, and mowing machines. These took place on the farm of the mayor, Thomas Pain, Esq., whose activity, hospitality, and earnestness to give due effect to the meeting, were the theme of general praise. The attendance was numerous, and the trials gave evident satisfaction — the greatest novelty being the mowing machine, which worked so well that we may as certainly predict the doom of the scythe as others have done the doom of the plough. This was not only the especial feature of the day, but promises to be one of the land-marks of the meeting. It is an American invention, exhibited by Clayton, of Dorset-square, and known as "the Eagle" patent. Although so great a novelty amongst us, this implement has long been in use in the United States. It comes, too, with the highest possible introduction, having taken a prize of £200 at the Massachusetts Agricultural Exhibition in 1856; and another during the same year at that of the Indiana State. It professes to cut grain and grass at all heights and on any kind of ground, however rough or trying. It is only right to say that its performance so far approaches its promise. Mr. Clayton himself is famous for his pipe and brick making machines, which were not only described at great length, but becoming illustrations of them given in the *Mark Lane Express* about a year since.

On Saturday the judges were in the field early, continuing the trials of drills, harrows, manure-distributors, grass-mowers, haymakers, horse rakes, &c.; and in the later part of the day they were summoned to the rye-field, to undertake the adjudication upon the reaping machines. Lord Kinnaird and Messrs. Crosskill, Burgess and Key, Dray and Co., Palmer and Monsieur Maziere were the exhibiters. This was by far the most interesting trial of the day: the work was well done, the balance of public favour evidently tending to the encouragement of the *side-delivering* machines. The mowing machines were tried both on clover and grass; the grass very heavy and entangled. One or two of the mowers made good work; and, when it is borne in mind that the same machine can be effectively applied to corn-mowing, it denotes great usefulness. It may afford some criterion of the labour of the Judges, when we say that already 27 horse-hoes, nearly as many drills and manure-distributors, 4 mowers, 7 reapers, 11 haymakers, and 14 horse-rakes have been tried.

MONDAY.—The trials of implements were continued to-day. Mazier's reaper was again tried with two horses in the rye field, the trial of the Saturday with one horse, and that not a strong one, not being considered satisfactory. The implement, however, proved too weak for its work, nor did it take sufficient breadth to entitle it to an honorary distinction. Rowsell's winrowing rake was tried as a barley rake, and proved to be well qualified to draw up the swathe, and rake clean at one operation. Fowler's ploughs were at work in the field, engaged for their use by the inventor. The inspection of the mechanical construction of the various implements tested, occupied the judges a large proportion of the day; and in the evening nearly all their awards were given in to the Director, Mr. B. Gibbs, who is as indefatigable as ever, and as accessible and temperate. What the Society would do without him we can scarcely imagine. The Stewards are early and late at their work, and do all that men can do to promote the success of the meeting. To please everyone is out of the question, and to keep all their subordinates in useful action is no light task, so many and varied are their engagements. The trial fields are as conveniently situated as usual, but still wide apart, and superintendence is everywhere required. Complaints are so often made relative to the trials, but the Stewards are seldom to blame. To-day the steam ploughs were directed to be in the field at twelve o'clock, in readiness to commence work at three o'clock. When we left at seven o'clock only one had succeeded in reaching the table-land on the hill appointed for the ploughing to take place. The consequence was that these trials were put off till the Tuesday morning, at seven o'clock. The road to the trial-fields was certainly a real test for the locomotive powers of the several steam engines. It was situated on the top of a hill, near a quarter of a mile from the road, and upon an ascent of one foot in seven-and-a-half incline. All the exhibiters, Messrs. Fowler, Boydell, Williams, and Hall, were reluctant to make the attempt; but Mr. Boydell, with his accustomed boldness and energy, took the lead. He left the showyard, with his tank of water, weighing about 7 tons, and descended into the road, then turning up at a short distance he entered the fields through a gateway, passing a plot of potatoes, then a field of oats, and ultimately to the top of the hill, up the steep incline named above, without a failure—a feat in steam locomotion never before equalled. Fowler's engine could not ascend this steep, and he was ultimately compelled to resort to his wire ropes and anchorages, and thus succeeded in reaching the top in safety. Hall made the attempt to get up, but he met with such difficulty in a narrow gateway as to bring him to a final stand, and ultimately to break down. On Tuesday this most important trial of steam ploughs and cultivators commenced, and formed the most interesting feature in the implement trials. The visitors were very numerous, and evinced too much interest to be pleasant to the officers of the Society, for neither the Stewards nor the police could keep them in order so that the judges could fairly view the working of each implement. Mr. Boydell's locomotive traction engine was harnessed to three double-breasted ploughs, attached by chains to the right side of the engine frame at several distances, to insure room for the ploughman holding the different ploughs. The engine performed its part to the admiration of all parties; but the ploughs were ineffectual in ploughing the stiff and stony soil appointed for them, and ultimately, after the completion of the plot assigned for the day, they were withdrawn. On Wednesday Howard's ploughs were substituted. This was a great improvement, and the work much better done. Fowler's ploughing was a far better performance, and retrieved the character of steam-ploughing. The work lay in fair and even furrows of considerable depth, and the quantity ploughed in a short time was marvellous. The performance was not novel, but its simplicity attracted general attention. A steam engine affixed at either end of the field drew by wire ropes alternately the frame of six plough bodies, three in work, three riding to be thrown into work at the other end, the mould-turners so arranged that the operation had all one inclination. Williams' apparatus for drawing was nearly the same as the above, but his plough-frame was a new arrangement. The plough bodies, six in number, were curiously affixed to one side of a triangular frame, and are worked by their own attachment and weight. This arrangement was also ineffectual in ploughing the still stiffer soil which fell to his lot. The peculiarity about this plough-frame, and its working, is that it is guided by a horse in front, and the ploughs are so arranged as to draw the frame, and not the frame the plough. This is effected by draft-irons from the plough bodies passing through the frame in part. The most beneficial adaptation for cultivation in this department was the attachment of Coleman's well-known cultivator, of very large dimensions, to Boydell's traction engine. This worked admirably, and bids fair to achieve the desideratum in steam cultivation—"an economical substitute for the plough or the spade." The soil is so stony and stiff that in ordinary ploughing two shares are requisite to complete the day's work. To make some approximate comparison for the guidance of the general public, one of Howard's ploughs, with a pair of horses, was to be seen ploughing on either side the steam-ploughs, and made excellent work. This was a good feature in the trial, but did not serve to exalt steam cultivation, as the excellence of Messrs. Howards' plough and ploughman tended to show an unfavourable contrast. It is also favourable as testing the economy of the trial, as the judges took time and depth, the result of which will of course come before the Society. It was interesting as well as amusing to note the various remarks at seeing steam *versus* horse-power so closely in competition. Coleman's scarifier moved the whole surface soil to the depth of 4½ inches readily, and left it in excellent order for crop harrowing.

THE SHOW WEEK.

This meeting at Salisbury is generally allowed to be the best ever known. Its success, moreover, is of the most legitimate character. It has been not merely fine weather, crowds of company, and hospitable intents, that have secured for the celebration so favourable a verdict. Strictly regarded as an agricultural exhibition, depending entirely on its own merits as such, there has been nothing so far to equal our gathering in Wiltshire. For the last few years, indeed, this has been the case with all the Society's shows. From Carlisle to Chelmsford, and from Chelmsford to Salisbury, we still culminate towards a perfection, that we may yet never feel satisfied in having attained. The gradual improvement, however, the steady progression of the Society is unmistakable. Like the man in the fair, the last article we have to offer is now always sure to be the best.

The superiority of the Salisbury Meeting is easily defined. There were more implements, and generally better implements. There was more stock, and taking the range of the whole classes, a far better show of stock than has ever been brought together on any previous occasion. In cattle, whether you went for Shorthorn, Hereford, or Devon, great was the display of each, and extraordinary the qualities of many of the animals. The sheep show was, if possible, even stronger still. In Downs, Leicesters, Country-downs, and Cotswolds were to be found all the most famous breeders, and, as a rule, all with better sheep than ever. Then, again, never was there such a lot of cart stallions, take them either for numbers or, mostly, for excellence. The thorough-bred and hunter classes are, too, manifestly improving; while the highest authorities deliberately pronounced the pigs to be altogether unprecedented. The very masses of mere sight-seers are said to have greatly amended their manners. They are coming day by day more and more to acknowledge the real utility of the Society; and few now walk through the yard with that half smile, half sneer, once so common a characteristic of the visitor. Machinery is no longer regarded by him as some inexplicable curiosity, or a good square bull as an "immense brute." In short, we have not only improved our stock, but improved our people. It is not the farmer alone who learns a lesson from the visit of the Royal Agricultural Society. The general public begin at length to appreciate, if not even to delight, in a pursuit that at one time they were more than indifferent to. They have had their eyes opened not only to what we are doing for ourselves, but for them also. Need we say at the wave of whose wand, or by the influence of what kind genius this has been accomplished? Or shall we wonder at the welcome everywhere given to a Society that has done what it was intended to do—so much common good?

Still it is not merely for this general excellence that Salisbury will stand celebrated. It could boast in many ways of the best of its kind. Let us begin, for instance, with what may fairly be considered the chief attraction of the cattle classes—that is, with the show of Shorthorns. The first, then, of these we come to on the prize list, Mr. Sterling's "John O'Groat," we shall be bold enough to rank as one of the very best bulls of his breed ever exhibited. He is altogether a far grander animal than the "Master Butterfly" of last season, of quite as fine a quality, and yet more symmetrical proportions. As the Yorkshireman said of the horse he was trying to cheapen, "Dang him! I can't see a fault about him." So it is, or at least very much so, with John O'Groat. He has gone on improving since he was first shown by his breeder—the well-known Mr. Fawkes, of Farnley—at the Carlisle Meeting of two years since. In fact, John O'Groat is a better animal than he at first promised to be—a recommendation which is not too common with high bred, over-fed cattle of any kind. The results of the last two or three seasons have now tended to rank Mr. Fawkes even higher than ever as a breeder of shorthorns. He himself again takes the prize for young bulls, with one that shows if anything yet more blood than his elder brother; while Mr. Marjoribanks owns the best bull calf in "Great Mogul." It may be remembered, that sporting auctioneer, Mr. Wetherell, backed Mogul to do all this when he was put up at the Bushey sale a few weeks since.

As a class, however, as containing the greatest number of good animals, there has been nothing like that of the Shorthorn Cows. Colonel Towneley, it will be seen, took the first and second prizes; Mr. Booth having two more highly commended, and Mr. Stratton another pair equally distinguished. Three such couples were certainly never before so associated together in one entry. They have of course nearly all some previous repute in our different show-yards; and as ranking worthily with them we may further instance the single entries of Mr. Wetherell, Mr. Langstone, and Mr. Douglas; the two first of these being also highly commended. The next class, of Heifers in Milk, is remarkable for containing what is commonly supposed to be the prettiest cow ever seen—Mr. Booth's "Queen of the May." Still she stood only second here, in the opinion of the judges, to Mr. Douglas's heifer, out of his famous Rose of Summer; an own brother to which, in the two-year-old bull class, showed by no means a strong family likeness to his sister, and so passed unhonoured accordingly. There was a good deal of discussion as to the award between this Rose of Athelstane and the Queen of the May, and we fancied the latter did not look quite so fresh as we have seen her.

We do not know whether in these Cow and Heifer Classes the judges took the milking qualities at all into consideration. Few speeches of late, however, have had more effect than that short pithy sentence of the American, Mr. French, at the Ipswich Meeting:—"If they don't give plenty of milk, I don't care how short their horns are." Any how, it is very certain one exhibitor of shorthorns at Salisbury brought a spare cow with him, to feed his stock from; just as the trainer took a barrel of water to Doncaster, so as not to throw a chance away for the St. Leger. We suppose, though, the milking cow would not have done to put by the side of some of the better cared for from the same herd. This is the great mistake our breeders have for some time been running into, and it is one the Society should take especial pains to correct.

As far as we may take the test of these agricultural exhibitions, the taste for Herefords is rapidly reviving. During the last two or three years the entries of this breed have in every way improved. In none of the classes has it been more remarkable than where this must be most wanted—in the female animals. In a generally very excellent show of the sort they had again the call at Salisbury. Lord Berwick's, Mrs. Palmer's, Lord Radnor's, and Mr. Hill's cows are all nearly perfect specimens of their kind. An upstanding Hereford ox may at times be rather an unwieldly-looking beast; but a well-formed, well-marked Hereford cow is quite a picture—take almost any of the prize animals here as the example.

And so, many will say, is the Devon—the pure, thorough-bred, home-reared Devon that is, which carried all before it at Salisbury. They came out in greater force than for some time; though, with the exception of Mr. Quartly, the most famous of our Devon men were not altogether the most distinguished. Mr. Turner, to be sure, had but few entries. Still the best things went nearly all to the natives; and Captain Davy, as one of the judges, stood up manfully for the awards, at the Farmers' Club dinner, on the day these were made and announced. It struck us still that the Somerset breeders showed hardly equal to what they have done. As one division of the show—for male and female animals almost equally commendable — the Devons were also quite up to the occasion. It is long since there has been such a lot to pick from as was seen at Salisbury.

"The other established breeds" and the new prizes for Channel Island cattle, lead us up to the only really weak place in the yard. The other established breeds were three or four Polled Scotch, and about as many more Suffolks. The Channel Island cattle were hardly up to one of Mr. Fowler's shipments, and we fancy we have bought better cows from him at Paddington than we saw here. Mr. Davy confessed he knew very little about them, and was in no way conversant with "the scale of points" by which a Jersey should be estimated. He advised accordingly that the next time the Society had a Channel Island class there should be at least one Channel Island judge. Their introduction, however, in this wise does not promise to lead to much.

A French gentleman was allowed to present a special prize for the best polled bull—that harmless-looking race with which our neighbours fell in love at sight. This scarcely brought the sort intended, but it went, though without any competition, to a very good Suffolk of Mr. Badham's, that has been shown very often, and never as yet, we hear, beaten. The special prizes of the local committee were more successful, bringing a famous show of Hampshire Downs. This was just one of those features which should characterize the locality, and that the Society has for some time very judiciously encouraged. There was a good opportunity of comparing the Hampshires with the Shropshire Downs, which were in great force amongst the other short-woolled sheep. Both are hourly increasing in repute. Indeed, since we have sanctioned so much additional size in the Southdown, it would be strange if these varieties did not command some success. It is only transplanting after all, with a very nice cross, for making a little more of them. The use they turn these South-country Downs to was well demonstrated, not merely in the visits, but in the journeying to Mr. Sidney Herbert and Mr. Mills.

With the Downs, *par excellence*, Mr. Webb has more than re-established himself. After the Chelmsford discomfiture everybody said he must show again; and he has, with "a vengeance." In the shearling rams there were between sixty and seventy exhibited, and the Duke of Richmond, Mr. Rigden, Lord Walsingham, Mr. Overman, Mr. Ellman, Mr. Sainsbury, Mr. Farquharson, and Mr. Harding amongst the competitors. In this class the judges sorted out just half-a-dozen sheep. After great deliberation they gave two of them the prizes, they *specially* commended two more, and they *highly* commended the other two. The three couple are the property of Mr. Jonas Webb! In the aged rams he took the first prize with a sheep unnoticed at Chelmsford, and the second with the much-discussed second-prize animal at that meeting. This is the ram which was let the other day at Babraham for 197 guineas, to go to America. But it is now said he has been bought outright for four hundred. To show this is not, after all, an artificial price, we may mention what was told us by a Surrey farmer, who has a leaning for the sort. In 1855 Mr. Webb let a sheep to the Duke of Richmond for 170 guineas the season; in 1856, to Lord Chichester, for 130 guineas; and this year, still in strong use, he goes to that good judge Mr. Rigden for 70 guineas. This is something like four hundred guineas in the three years, and there may be something more to credit to him even then. It is only right to add, some other of the Southdown men honestly admitted they had never sent out such good sheep as they did to Salisbury; and Mr. Rigden, Lord Walsingham, and Mr. Overman had due commendations accordingly. Next to Mr. Webb, however, indisputably came Mr. Overman, first and second in a very good class of ewes. The Duke showed by no means on fair terms, as his sheep were much injured in the train, from the accidental firing of the straw on which they stood.

Mr. Sanday is to the Leicester what Mr. Webb is to the Southdown. He had, indeed, yet more his own way, and took every prize that was offered. For the pure Leicester there is no other man like him; and however fond some of us may be of trying our hand at experiments, it is here you must go again and again for the cross, just as you would to the thorough-bred horse. There may be bigger sheep than Mr. Sanday's, but there are none safer to deal with.

We were threatened some time ago with a wonderful show of Cotswolds, and this came up to all that had been said of it. There was not a bad sheep sent; and the only regret was that more could not be distinguished. Mr. Lane, it will be found, was the hero of this breed, and deservedly enough. There are many, however, so near him, even as it is, that we do not think the Cotswold business is likely to go to one or two breeders only. Such men as Messrs. Handy, Beale Brown, Fletcher, Hewer and Ruck, will do something more than "look on" with a kind of sheep there is an increasing demand for, and which they have only to continue to cultivate as judiciously as they have done.

So far our case as to the success of the Salisbury Meeting proves itself; while the horse show only still further confirms it. The entry of aged cart stallions was close upon forty in number, with many already prized horses amongst them. These included a great many Suffolks, with Mr. Barthropp's Ipswich horse at their head. They reached, however, no higher than high commendation, of which there were plenty, and certainly not without due cause. With a few inferior animals there was a strong majority of very good; and with the Suffolk, though found amongst these, scarcely as much distinguished as perhaps he might have been. The two prize horses are both greys. The first is a Lincolnshire horse of immense size and power, with a most extraordinary mane. The second, a dark grey—three-year-old, against the other at six—is a cross between the Suffolk and Lincoln, and almost as good to look at as the other, some thought better. We had the fortune, however, to see them both out, and then it was all in favour of Matchless. He has the light, lively action of a pony; while the young one, on the other hand, is but a bad mover. This latter took the premium last year at Chelmsford for dray horses. It seems a niceish point to separate the two classes, especially when you get a direct cross of one of the best cart-horses in the world—the Suffolk—to make the dray horse of one year, and the common draught horse of the next. This horse, however, fully demonstrates the policy of crossing the Suffolk, say with the Lincoln, Clydesdale, or other heavier horses. There is another example of this in a foal from a Suffolk mare by a Shire horse, so superior in most respects to the pure breed as to give additional weight to the necessity of a judicious intermixture of blood. Perhaps the Suffolk men would not lend themselves to this; but from what we have seen we fancy it is an experiment worth more trial than it has yet had.

In the next class Mr. Clayden took the first prize for a two-year-old stallion, about whose merits there could be no mistake. With a little greater girth and more width of chest he would be something like a perfect specimen of the sort. The Suffolks stand well again in the mare and foal class. Mr. Walton's mare has magnificent shoulders, and is altogether a fine animal, but with a foal by no means worthy of her. As a class the two-year-olds was but a middling one.

There was a lot of hunting mares generally and deservedly commended. There would appear to be more good ones of this sort in the country than we give ourselves credit for. The hunting mares were generally commended at Newton, and a large entry of them narrowly escaped a similar compliment at Ipswich. Then, again, here at Salisbury there were some thorough-bred horses of repute to get hunters. Theon, Little Brownie, Knight of Gwynne, Hobbie Noble, Lascelles, Clumsy, and Spencer, all with some fame, either in the Calendar or the Stud Book. So do not let the Council despair of their show of riding horses. Singularly enough the prize went just as a racing-man would have decided it—to the best known, best bred, and certainly the best looking horse of the lot. This was Hobbie Noble—rather a crack runner in his day, and with lots of power and style about him to do credit to his selection as the hunter-stallion. He is about the highest priced horse ever known, having once been sold for six thousand guineas. The hack mares were but indifferent; and the hack stallions as curious a collection of all sorts as it is possible to imagine. They began with a perfect picture of a pony, and ran up to a big Cleveland horse. But "a good hack" has always been rather a difficult thing to describe, if not to alight on. There was still a good one here, and another celebrated nag, one Hotspur, who ran the Flying Dutchman to a head for the Derby. He is a wonderfully good topped horse, as handsome and lively as can be, and certainly looking as much like getting a clever hack as anything we have seen for a long day. Again, let not the Council despair.

The second division of the Implement Prize-sheet, as now adjusted, came under review at Salisbury. According to this classification, the Judges' duties were devoted to drills, horse-hoes, hay-makers, horse-rakes, reaping machines, waggons, carts, and similar apparatus now used in preparing and harvesting our crops. We must leave our own correspondent and the award of prizes to announce the firms which distinguished themselves on this occasion. The established houses, however, would appear to have little to fear, for we find still to "the fore," with inventions they have long been famous for, such men as the Messrs. Garrett, Hornsby, Ransome, Howard, Smith and Ashby, Barrett and Exall, Holmes, Dray, Crosskill, Burgess and Key, and others. The chief interest of this department was centred in the trials of the reapers, the relative merits of which have for the last few years commanded extraordinary interest. If anything this only increases; while the grand secret of which really is the best, seems almost as much a matter of opinion as ever. It is still only right to explain that the machine exhibited by Burgess and Key has been strikingly improved since it was last shown. That great point, the delivery, has been further experimented upon, and with very signal success; the entire credit of such amendment being, we believe, on this occasion, due to the exhibitors themselves. Crosskill and Dray have of course still their numerous friends; but the public favourite was unquestionably the prize machine, the sale of which during the week was altogether unprecedented. The American mowing machine we have already spoken to as one of the land-marks of the meeting.

A yet greater attraction was the special prize for steam-ploughing: At Chelmsford last year, it will be remembered, the agricultural world began to look upon this as a feat almost accomplished. With a little more time and attention we should all be remodelling our farmsteads, fields and gateways, for the admission of this mighty power in a new phase. Twelve months elapse, and we appear inclined to do nothing of the kind. The result of the Salisbury week is, simply, that we are but little if any nearer the attainment of ploughing by steam. It is a system, as so far understood, by no means economical; if, indeed, it be, in any general way, practicable. We rarely recollect so complete a revulsion of public feeling. The trial-ground was certainly as trying a piece of land as could have been selected, with a terrible hill to face in getting on to it. With the exception of Boydell, this was accomplished under all sorts of mishaps and misfortunes. Even when they did get to work the public did not take very strongly to any of them. It was amusing indeed, to hear how the farmers flew back to their old love, when Mr. Howard, rather wickedly, sent up one of his neat ploughs, and a pair of good stepping horses, to go to work by the side of the leviathans—to plough as well, as deep, and as fast as any of them. As for economy, the grand proviso of the undertaking, that alone must have settled the question as to the five hundred pounds offer. Fowler, as usual, did by far the best, but with much waste of time and trouble in adjusting his machinery; while Boydell scarcely ploughs at all, but merely tears up or scarifies the ground. The Judges have not yet published their report, but no one imagines that the premium can be awarded.

We must leave the wondrous show of the implement yard—the steam-engines at work on one side—the well-arranged stands, and equally well-mapped-out avenues, to our special correspondent, who will here and hereafter endeavour to do justice to so prolific and laudable a theme. Despite the increased numbers who visited the ground on each of the three open days, we were told "business" with many was not quite so good as usual. The same was the case with the stock, where the foreigner was by no means so active as last year; or we might have had to record another twelve or fifteen hundred guinea bull. Still most of the leading firms did well, and one of the first of these, the Messrs. Garrett, as they assured us, quite as ready a trade as ever. But then they were "under more favourable circumstances than some others, having many of their implements in trial, and these having been very successful, the fact of course gave an impetus to their sales." So much for the prize system, which came under some further discussion amongst the Society of Agricultural Engineers on Tuesday evening, the especial topic being the pamphlet lately issued. This would appear to have several opponents even in the trade, and three or four well-known firms have withdrawn from the Society, in consequence of the essay being issued as under its sanction. Some makers have since, we are told, signed a protest, directly ignoring the argument thus advanced; while not a few others, supposed to be intimately associated with "Agricultural machinery as a branch of National Industry," by no means go the whole hog as to having no prizes at all.

The visit to Wilton, Mr. Squarry's Lecture, and the Council Dinner, will all be found reported under their several headings. As we said last week, the Council have contrived, for this one year at any rate, to destroy the focus, the one great rallying point of their meeting. They thought it better to have no such rallying point, but, as

Lord Portman and Mr. Raymond Barker kindly explained, that the members should break up into divers little parties and dinners. We are so thoroughly sick of condemning a false step that has so effectually condemned itself, that we shall say little more on the subject. Sufficient be it to record that the new arrangement was a most lamentable failure. The Council Dinner, on Wednesday, was a failure, with just about half the two hundred present that had been provided for. The Town and County Dinner, on the Thursday, was another failure, with some sixty in place of another two hundred expected. The latter we rather regret, as it was but a bad compliment to such good men as Mr. Mills and the Mayor, who deserved something better if ever men did yet. As the joke of the week went, Mr. Pain should certainly have had one of the special prizes as "the best mayor for agricultural purposes." Had there been but the customary Pavilion Dinner, it is by no means improbable but that the Prince Consort, who visited the Yard on Wednesday, might have been induced to attend it, and the Duke of Richmond to preside. We have so to further thank these reformers for the loss of a little *eclàt* that would have done the Society no harm.

The week finished with the usual General Meeting on Friday, and with about the usual attendance. There was certainly more discussion, but very little that will come as novelty to the readers of the *Mark Lane Express*—There should be the hitherto open dinner—The Society should not deal in stale news—These General Meetings should be fixed for days when the general body of members can attend them—There should be head yardmen or paid stewards permanently appointed—These are all matters that have been mooted again and again, if not wholly originated, in our columns. There was something more, that no one will care much about, and a tolerably obvious contradiction as to the Society being in such a bad way when the week showed it had never done better. As Mr. Acland pertinently remarked, we must be careful to notice from whom these wholesale objections and complaints emanate.

We must stay to give our customary and well-merited word of approval to the exertions of Mr. Gibbs and Mr. Hudson, as the chief officers of the Society, and especially to Lord Portman, who is ever so ready to place his valuable services at their disposal. With this we may turn at once to a prize list that, we may just whisper *(again)*, might be a little better arranged. The commendations, as now mixed up altogether, are of little or no value; whereas it is well known a high commendation is often much on a par with a second prize. They are written out, too, in the most cockneyfied fashion; as, for instance, Mr. Curmick's highly-commended "*horse*" turns out to be a two-year-old filly—Mr. Ward's highly-commended "*horse*" a mare and foal, and so on. We have, at some trouble, endeavoured to re-arrange ours as it should read. Unfortuately but few others care to do as much, and the general run of our contemporaries, London and local, print off their lists, if they give the commendations at all, just as they are issued in the yard. We will not even answer for ours being quite correct, as we have scarcely been able to give that time to it such a puzzle really requires. How, for example, are we to get over such a queer place as this? In the High Commendations we find 786 Mr. Shittler's pen of pigs, and in the catalogue we have these pigs transformed into Hampshire Down ewes! In all modesty we offer our plan as a model one for the Society.

PRIZES FOR CATTLE, &c.

SHORT-HORNED CATTLE.

JUDGES.—W. Bartholomew, Goltho, Wragby.
J. Wright, Chesterfield.

CLASS 1.—Bulls, calved on or before the 1st of July, 1855 and not exceeding four years old.

First prize of £30 to William Stirling, M.P., of Keir, Dumblane, Perth (John o' Groat).

Second prize of £15 to James Haughton Langton, of Sarsden House, Chipping Norton, Oxon (Glo'ster's Grand Duke).

CLASS 2.—Bulls, calved since the 1st of July, 1855, and more than one year old.

First prize of £25 to F. H. Fawkes, of Farnley Hall, Otley, Yorks (Sir Edmund Lyons).

Second prize of £15 to J. W. Brown, of Uffcott, Swindon.

CLASS 3.—Bull calves, above six and under twelve months old.

First prize of £10 to Stewart Majoribanks, of Bushy Grove, Watford (Great Mogul).

Second prize of £5 to Richard Booth, of Warlaby, Northallerton (Lord of the Valley).

CLASS 4.—Cows, in-milk or in-calf.

First prize of £20 to Lieut.-Col. Towneley, of Towneley Park, Burnley (Victoria).

Second prize of £10 to Lieut.-Col. Towneley (Vestris 3rd).

Highly commended.—Mr. Stratton for two cows, Mr. Booth for two cows, Mr. Wetherell's and Mr. Langston's cows.

CLASS 5.—Heifers, in-calf or in-milk, not exceeding three years old.

First prize of £15 to James Douglas, of Athelford Farm, Drem, Haddington (Rose of Athelstane).

Second prize of £10 to Richard Booth (Queen of the May).

Highly commended.—Mr. Stratton's heifer.

The whole of class 5 were commended.

CLASS 6.—Yearling heifers.

First prize of £10 to Lieut.-Col. Towneley (The Rose of Towneley).

Second prize of £5 to Richard Booth (Queen Mab).

Highly commended.—Lieut.-Col. Towneley for two heifers, and Mr. Douglas's heifer.

The whole of class 6 were commended.

HEREFORDS.

JUDGES.—G. W. Baker, Park Farm, Woburn;
J. Tanner Davy, Ashton, Southmolton;
W. Symonds, Blandford.

CLASS 1.—Bulls, calved on or before the 1st of July, 1855, and not exceeding four years old.

First prize of £30 to Edward Williams, of Lowess Court, near Hay, Brecon (Radnor).

Second prize of £15 to Phillip Turner, of The Leen, Pembridge, Leominster (Silurian).

CLASS 2.—Bulls, calved since the 1st of July, 1855, and more than one year old.

First prize of £25 to Edward Price, of Court House, Pembridge, Leominster (Magnet 3rd).

Second prize of £15 to Richard Hill, of Golding Hall, Shrewsbury (Candidate).

CLASS 3.—Bull calves, above six and under twelve months old.

First prize of £10 to Lord Bateman, of Shobdon Court, Leominster (The Captain).

CLASS 4.—Cows, in-milk or in-calf.

First prize of £20 to Lord Berwick, of Cronkhill, Shrewsbury (Carlisle).

Second prize of £10 to Mrs. Palmer, of Mudford, near Ilchester, Somerset (Beauty).

CLASS 5.—Heifers, in-milk or in-calf, not exceeding three years old.

First prize of £15 to Richard Hill, of Golding (Star).

Second prize of £10 to Phillip Turner (Graceful).

Commended.—A heifer shown by the representatives of the late Mr. W. S. Powell, and Mr. Walker's heifer.

CLASS 6.—Yearling heifers.

First prize of £10 to Earl of Radnor, of Coleshill House, Highworth (Superb).

Second prize of £5 to Lord Berwick (Beauty).

Highly commended.—Mr. Rea's heifer.

The whole of class 6 were commended.

DEVON CATTLE.

JUDGES.—G. W. Baker, Park Farm, Woburn;
J. Tanner Davy, Ashton, Southmolton;
W. Symonds, Blandford.

CLASS 1.—Bulls, calved on or before the 1st of July, 1855, and not exceeding four years old.

First prize of £30 to James Davy, of Flitton Barton, near South Molton (Napoleon).

Second prize of £15 to John Bodley, of Stockley Pomeroy, near Crediton, Devon (Napoleon).

Highly commended.—Mr. Gibbs's bull.

CLASS 2.—Bulls, calved since the 1st of July, 1855, and more than one year old.

First prize of £25 to James Wentworth Buller, M.P., of Downs, near Crediton.

Second prize of £15 to John C. Halse, of Molland, near South Molton (Sultan, jun.)

CLASS 3.—Bull calves, above six and under twelve months old.

First prize of £10 to James Quartly, of Molland House, South Molton (Lord Nelson).

Second prize of £5 to His Royal Highness the Prince Consort (Prince Arthur).

Commended.—Mr. Davy's bull.

CLASS 4.—Cows, in-milk or in-calf.

First prize of £20 to James Quartly (Graceful).

Second prize of £10 to James Quartly (Sylph).

• *Highly commended.*—The Prince Consort's, Mr. Gibbs', and Mr. Turner's cows.

The whole of class 4 were commended.

CLASS 5.—Heifers in milk or in calf not exceeding three years old.

First prize of £15 to Edward Pope, of Great Toller, near Dorchester (Fancy).

Second prize of £10 to James Hole, of Knowle House, near Dunster.

Commended.—Mr. Pope, for two heifers; and Mr. Turner's heifer.

CLASS 6.—Yearling Heifers.

First prize of £10 to James Quartly (Fancy).

Second prize of £5 to William Mulling Gibbs, of Bishops Lydeard, near Taunton.

Highly commended.—Mr. Halse's heifer.

Commended.—The Prince Consort's heifer.

CHANNEL ISLANDS' CATTLE.

JUDGES.—G. W. Baker, Park Farm, Woburn.
J. Tanner Davy, Southmolton.
W. Symonds Blandford.

CLASS 1.—Bulls calved on or before the 1st of January, 1856.

The prize of £10 to Alexander Elphinstone, of Chuten Glen, Christchurch (Jersey).

CLASS 2.—Bulls calved since the 1st of January, 1856, and more than one year old.

No competition.

CLASS 3.—Cows in milk.

The prize of £5 to H. C. Compton, of the Manor-house, Lyndhurst (Guernsey).

CLASS 4.—In-calf Heifers, not exceeding two years old.

The prize of £5 to James Beckingham, of Dell Farm, Church Oakley, Hants (Channel Island).

CLASS 5.—Yearling Heifers.

The prize of £5 to L. P. Maton, of Maddington, Devizes (Jersey).

OTHER ESTABLISHED BREEDS.

[Not including the Shorthorn, Hereford, Devon, or Channel Islands' breed.]

JUDGES.—G. W. Baker, Park Farm, Woburn.
J. Tanner Davy, Southmolton.
W. Symonds, Blandford.

CLASS 1.—Bulls calved on or before the 1st of July, 1855, and not exceeding four years old.

No competition.

CLASS 2.—Bulls calved since the 1st of July, 1855, and more than one year old.

No competition.

CLASS 3.—Cows in-milk or in-calf.

The prize of £10 to Thomas R. B. Cartewright, of Aynho, near Brackley, Northampton (Polled Angus).

Highly commended.—Mr. Crisp's Suffolk cow.

CLASS 4.—Heifers in-milk or in-calf, not exceeding three years old.

The prize of £5 to Rev. Morton Shaw, of Rougham Rectory, near Bury St. Edmunds (Suffolk).

CLASS 5.—Yearling Heifers.

No competition.

HORSES.

JUDGES.—J. H. Bland, Flambro.
J. Booth, Cotham, Newark.
W. Dickinson, New Park, Lymington.
S. Watts, Belton, Grantham.

AGRICULTURAL HORSES GENERALLY.

CLASS 1.—Stallions for Agricultural Purposes foaled on or before the 1st of January, 1855.

First prize of £30 to T. B. T. Hildyard, of Flintham Hall, near Newark (Matchless).

Second prize of £20 to William Baker and Son, of Bury Farm, Stapleford, Cambridge (Young Inkermann).

Highly commended.—Mr. Ogden's, Mr. Biddell's, Mr. Wilson's, and Mr. Barthropp for two horses.

Commended.—Mr. Hibberd's, Mr. Seeton's, and Mr. Williams' horses.

CLASS 2.—Stallions for Agricultural Purposes foaled in 1855.

First prize of £20 to Samuel Clayden, of Little Linton. Cambridgeshire (Royal George).

Second prize of £10 to William Wilson, of Baylham Hall, Ipswich (Young Duke).

Highly commended.—Mr. Gobbitt's, Mr. Ward's, Mr. Badham's, Mr. Pond's, and Mr. Crisp's horses.

Commended.—Mr. Porter's, Mr. Hibberd's, Mr. Ward's, Mr. Rodwell's, and Mr. Mills's horses.

CLASS 3.—Mares and Foals for Agricultural Purposes.

First prize of £20 to Samuel Wolton, jun., of Kesgrave, near Woodbridge.

Second prize of £10 to Samuel Wrinch, of Great Holland, near Colchester.

Highly commended.—Mr. Fowle's, Mr. Gobbitt's, Mr. Lavington's, Mr. Ward's, Mr. Cordery's, Mr. Little's, Lord St. John's, and Mr. Palmer's mares.

Commended.—Mr. Bidmed's and Mr. Browne's mares.

CLASS 4.—Two-year-old fillies for Agricultural Purposes.

First prize of £15 to William Long, of Amesbury, Wilts.

Second prize of £10 to Samuel Wrinch, of Great Holland, near Colchester.

Highly commended.—Mr. Curmick's filly.

Commended.—Mr. Wolton's and Mr. Barthropp's fillies.

DRAY HORSES.

CLASS 1.—Stallions foaled on or before the 1st of January, 1855.

The prize of £15 to William Buller, jun., of Hanwell Fields, near Banbury.

CLASS 2.—Stallions foaled in the year 1855.

The prize of £10 to Lord St. John, of Melchbourne, near Higham Ferrers.

CLASS 3.—Mares and Foals.

The prize of £10 to James Rawlence, of Bulbridge, Wilton, near Salisbury.

CLASS 4.—Fillies foaled in the year 1855.

Prize withheld.

OTHER HORSES.

CLASS 1.—Thorough-bred Stallions for getting Hunters.

First prize of £30 to Thomas Groves, of Plompton Hall, near Knaresborough (Hobbie Noble); second of £20 to Thomas Manfield, of Thirkby Bridge, near Thirsk (Spencer).

Highly commended.—Mr. Kirby's Stotforth.

Commended.—Mr. Elphinstone's Arabian.

CLASS 2.—Stallions for getting Hackneys.

The prize of £20 to James Godwin, of Allington, near Devizes (Hotspur).

Commended.—Mr. Elphinstone's Arabian.

CLASS 3.—Brood Mares for breeding Hunters.

The prize of £20 to Thomas Fraser Grove, of Seagry House, near Chippenham.

The whole of class 3 were commended.

CLASS 4.—Brood Mares for breeding Hackneys.

The prize of £15 to John B. Starky, of Spye Park, near Chippenham, Wilts.

SHEEP.

LEICESTERS.

JUDGES.—Thomas Twitchell, Wellington, Bedford.
Charles Stokes, Kingston, Kegworth.
William Tindall, Wheatly, Doncaster.

CLASS 1.—Shearling Rams.

First prize of £25 to W. Sanday, of Holme Pierrepont, Nottingham; second of £15 to W. Sanday.

CLASS 2.—Rams of any other age.

First prize of £25 to W. Sanday; second of £15 to W. Sanday.

Highly commended.—Mr. Sanday for 3 other rams, Lord Berner's, Mr. Pawlett's, and Mr. Cresswell's rams.

CLASS 3.—Pen of Five Shearling Ewes of the same flock.

First prize of £20 to W. Sanday; second of £10 to W. Sanday.

SOUTH-DOWN, OR OTHER SHORT-WOOLLED SHEEP.

JUDGES.—W. H. Beauford, Bedford.
E. Trumper, Nuneham, Oxford.
H. Fookes, Whitchurch, Blandford.

CLASS 1.—Shearling Rams.

First prize of £25 to Jonas Webb, of Babraham, Cambridge; second of £15 to Jonas Webb.

Highly commended.—Mr. Webb for two other rams, and Mr. Rigden's ram.

Specially commended.—Mr. Webb for two more rams.

Commended.—Lord Walsingham's, Duke of Richmond's (2), and Mr. Henry Overman's (2) rams.

CLASS 2.—Rams of any other age.

First prize of £25 to Jonas Webb; second of £15 to Jonas Webb.

Highly commended.—Another of Mr. Webb's rams.

Commended.—Mr. Overman's two rams.

CLASS 3.—Pen of five Shearling Ewes of the same flock.

First prize of £20 to Henry Overman, of Weasenham, near Rougham; second of £10 to Henry Overman.

Highly commended.—Mr. Sainsbury's, Lord Walsingham's, and Mr. Lucas's ewes.

Commended.—Lord Radnor's and Lord Walsingham's ewes.

SHORT-WOOLLED SHEEP

Not qualified to compete as Southdowns.

CLASS 1.—Shearling Rams.

First prize of £25 to George Adney, of Harley, near Much Wenlock, Salop (Shropshire Down); second of £15 to William Humfrey, of Oak Ash Chaddleworth, near Wantage, Berks. (Hampshire Down).

CLASS 2.—Rams, of any other age.

First prize of £25 to Samuel Meire, of Castle Hill, Much Wenlock, Salop (Shropshire Down); second of £15 to George Adney (Shropshire Down).

Commended.—Mr. Humphrey's ram.

CLASS 3.—Pen of five Shearling Ewes of the same flock.

First prize of £20 to William Brown Canning, of Chisledon, near Swindon (Hampshire Downs); second of £10 to William Rowden Shittler, of Bishopston, near Salisbury (Hampshire Downs).

Commended.—Mr. Pain's ewes.

LONG-WOOLLED SHEEP.

Not qualified to compete as Leicesters.

JUDGES.—Henry Beevor, Barnby Moor, East Retford.
John Clarke, Long Sutton.
E. L. Franklin, Ascott, Wallingford.

CLASS 1.—Shearling Rams.

First prize of £25 to William Lane, of Broadfield Farm, Northleach, Gloucester; second of £15 to William Lane.

Highly commended.—Mr. Fletcher's, Mr. Porter's, and Mr. Garne's rams.

Commended.—Mr. Brown's ram and Mr. Hewer's (2) rams.

CLASS 2.—Rams of any other age.

First prize of £25 to Edward Handy, of Sierford, near Cheltenham, Gloucester; second of £15 to William Garne, of Aldsworth, near Northleach.

Highly commended.—Mr. Brown's two rams, Mr. Hewer's, Mr. Lane's, and Mr. Walker's rams.

Commended.—Mr. Fletcher's and Mr. Howell's rams.

CLASS 3.—Pen of five Shearling Ewes of the same flock.

First prize of £20 to William Garne; second of £10 to William Lane.

Highly commended.—Mr. Hewer's and Mr. Lanes's ewes.

Commended.—Mr. B. Browne's two pens of ewes.

PIGS.

JUDGES.—Henry Thurnall, Royston.
J. Unthank, Netherscales, Penrith.
B. Swaffield, Pilsbury, Ashborne, Derbyshire.

CLASS 1.—Boars of a large breed.

First prize of £10 to John Harrison, jun., of Heaton Norris, near Stockport; second of £5 to Joseph Tuley, of Truewell Farm, near Keighly, Yorkshire.

Highly commended.—Mr. Blandford's boar.

CLASS 2.—Boars of a small breed.

First prize of £10 to George Mangles, of Givendale, Ripon Yorkshire; second of £5 to Lieut.-Col. Charles Towneley.

Highly commended.—Lord Portsmouth's boar.

Commended.—Mr. Hodgson's boar, and Mr. Horsefall's two boars.

CLASS 3.—Breeding sows of a large breed.

First prize of £10 to William Hewer, of Sevenhampton, near Highworth; second of £5 to John Harrison, jun., of Heaton Norris, near Stockport.

Highly commended.—Mr. Palmer's sow.

Commended.—Mr. Tuley and Mr. Calvert's sows.

CLASS 4.—Breeding sows of a small breed.

First prize of £10 to H. Watson, of Bolton Park, near Wigton, Cumberland; second of £5 to Thomas Crisp, of Butley Abbey, near Woodbridge, Suffolk.

Highly commended.—Mr. Palmer's sow.

Commended.—Mr. Mangle's two sows, and Mr. Turner's sow.

The whole of class 4 were commended.

CLASS 5.—Pens of three breeding sow-pigs of a large breed, of the same litter, above four and under eight months old.

The prize of £10 to George Bowes Morland, of Abingdon, Berks.

Highly commended.—Mr. Ashton's pigs.

Commended.—Mr. Bailey's pigs.

CLASS 6.—Pens of three breeding sow-pigs of a small breed, of the same litter, above four and under eight months old.

The prize of £10 to R. H. Watson.

Highly commended.—Mr. Mangle's and Mr. Biddell's pigs.

Commended.—Mr. Palmer's pigs.

The show of pigs was *generally commended.*

SPECIAL PRIZES

GIVEN BY THE LOCAL COMMITTEE AT SALISBURY.

HAMPSHIRE DOWN SHEEP.

JUDGES.—George Brown, Avebury, Marlborough.
T. Ferris, Charlton, Wilts.
Joseph Blundell, Bursledon, Hants.

CLASS 1.—Shearling rams.

First prize of £20 to William Humfrey, of Oak Ash, Chaddleworth, near Wantage; second of £10 to William Humfrey.

CLASS 2.—Rams of any other age.

First prize of £20 to William Humfrey; second of £10 to Stephen King, of Old Hayward Farm, near Hungerford.

CLASS 3.—Pens of five ram lambs.

First prize of £20 to John T. F. Pain, of North Houghton Manor, near Stockbridge; second of £10 to Robert Coles, of Middleton Farm, Norton Bavant, near Warminster.

CLASS 4.—Pens of five shearling ewes.

First prize of £20 to W. Browne Canning, of Chisledon, near Sindon, Wilts; second of £10 to Edward Waters, of Stratford-sub-Castle, near Salisbury.

SPECIAL PRIZE OFFERED BY M. DUTRONE, OF SARLABOT, NEAR TROUSSEAUVILLE-DIVES, CANTON OF DOUZULE, DEPARTMENT OF CALVADOS, IN FRANCE.

Best polled bull of any age.

The gold medal to G. D. Badham, of the Sparrow's-nest, near Ipswich (Suffolk).

FARM POULTRY.

The POULTRY JUDGES were J. Bailey, Mount-street, London.
G. J Andrews, Dorchester.

PRIZES FOR IMPLEMENTS.

JUDGES.

For Drills—
H. B. Caldwell, Hilbourne, Brandon, Norfolk.
J. Druce, Eynsham, Oxon.

For Horse Hoes, Waggons, and Carts—
Fielder King, Buriton, Hants.
J. J. Rowley, Rowthorne, Mansfield, Notts.

For Mowing-Machines and Hay-makers—
J. Clarke, Long Sutton, Lincolnshire.
W. Owen, Rotherham, Yorkshire.

For Manure Distributors, and Miscellanies—
W. Chalcroft, Bromshot, Liphook.
C. Sewell Read, Barton Hall, Thetford.

For Reaping-machines and Steam Ploughs—
The whole of the Judges were called in.

Consulting Engineers—
Messrs. Amos and Owen.

For grass-mowing machine—£15, to Henry Clayton (of Atlas Works, London); and £5, to Wm. Dray and Co.

For hay-making machines — £4, to Wm. Newzam Nicholson; £3, to Barrett, Exall, and Andrews; £2, to Smith and Ashby; and £1, to Henry Attwood Thompson.

For horse rake—£3, to James and Frederick Howard; £3, to Ransomes and Sims; £2, to Barnabas Urry; £1, to Smith and Ashby; and £1, to William Langford Fisher.

For Chambers's broadcast manure distributor—£8, to R. Garrett and Sons.

For manure distributor (dry)—£5, to Holmes and Sons; and £5, to R. and J. Reeves.

For liquid manure distributor—£2, to Isaac James.

For drill for general purposes—£5, to R. Hornsby and Sons; and £3, to R. Garrett and Sons.

For corn and seed drill—£7, to Holmes and Sons.

For drill for small occupations—£2, to R. Hornsby and Sons; and £2, to R. Garrett and Sons.

For drill for ridge and flat work, for turnips, &c.—£5, to R. Hornsby and Sons; and £2, to R. Garrett and Sons.

For liquid drop drill—£4, to R. Garrett and Sons.

For reaping machine—£10, to Burgess and Key; £6, to A. Crosskill; and £4, to Lord Kinnaird.

For horse hoe—£3, to R. Garrett and Sons; £2, to William Smith; £1 10s., to Hugh Carson; £2, to Priest and Woolnough; and £1 10s., to E. H. Bentall.

For light waggon—£2, to T. Milford and Son; £2, to John Kiddle; £2, to A. Crosskill; £2, to John Gifford; £1, to Isaac James; and £1, to George Milford.

For light cart—£2, to William Busby; £2, to William Ball; £2, to T. Milford and Son; £2, to James Woods; £1, to A. Crosskill; and £1, to J. and F. Howard.

For cranked axle cart—£4, to T. Milford and Son; £4, to William Busby; £3, to A. and T. Fry; £2, to Alfred Crosskill; and £2, to J. and F. Howards (Maznard).

SILVER MEDAL.

R. and J. Reeves, for economical drill for dry manure and seeds.
J. and F. Howard, for improved drill presser.
Thomas Pain, for paring plough.
Samuel Rowsell, for American iron-pointed horse rake.
Cottam and Cottam, for collar bar for iron hurdles.
Perreaux and Co., for India-rubber pump valve.
Hill and Smith, for a wrought-iron sheep trough.
H. Carson, for a cheese press.
Cockey and Son, for a cheese-making apparatus.
T. Milford and Son, for a light cart.

HIGHLY COMMENDED.

William Newzam Nicholson's hay-making machine, for two horses.
William Williams's horse rake, for its easy compound lever lift and general arrangement.
John Cooper and Co.'s horse rake, for its useful adjustment in balancing the teeth.
J. Marychurch and Son's horse rake, for its peculiar facility in its delivery, being nearly self-acting.
R. Hornsby and Son's corn and seed drill.
R. Garrett and Son's corn and seed drill.
R. Hornsby and Son's corn drill.
Holmes and Son's ridge drill.
R. and J. Reeves's liquid manure drill.
Burgess and Key's reaping-machine.
W. Dray and Co.'s (Palmer) reaping-machine.
Henry Cogan's horse hoe.
J. and F. Howard's horse hoe.
J. Stalker's horse hoe.
Holmes and Son's horse hoe.
W. Busby's horse hoe.
Ransome and Sims's horse hoe.
Mapplebeck and Lowe's horse hoe.
James and Malcolm's weighing-machine for potatoes, &c.
Burgess and Key's India-rubber pump.
Cottam and Hallen's stable fittings.
J. and F. Howard's four-horse tubular whippletrees.
Greening and Co.'s iron wire fence.
W. P. Stanley's sack barrow and raiser.
Barnard and Bishop's cast-iron water-cock.
J. Gripper's wrought-iron sheep-trough.
Thomas Gibbs and Co.'s collection of seeds and roots.
T. Milford and Son's light waggon.
A. Crosskill's light waggon.
W. Dray and Co.'s light waggon.
W. Dray and Co.'s light van waggon.
A. Silcock's light cart.
George Milford's light cart.
H. A. Thompson's light cart.
H. Hayes and Son's light cart.
Wm. Crowley and Son's light cart.
A. and T. Fry's light cart.
Brown and May's light cart.
Samuel Garn's light cart.
John Eaton's light cart.
B. Samuelson's revolving horse hoe.

COMMENDED.

Holmes and Son's drill for general purposes.
Holmes and Son's drill for small occupation.
Wm. Dray and Co.'s (Hussey) reaping-machine.
John Green's horse hoe.
A. and T. Fry's horse hoe.
R. Read's stand of hydraulic and other apparatus.
C. Powell's hand dibble.
Cottam and Cottam's patent swing manger.
James Wood's asphalting apparatus.
W. Busby's implement for topping and tailing turnips.
Hill and Smith's premium iron hurdles.
A. Lyon's sausage machine.
Benjamin Fowler's, Whitefriars-street, London, valve box for double acting pump.
Wallis and Haslem's drilling machine.
Burgess and Key's American rotary horse-power.
J. and F. Howard's oval iron plough coulter.
Crowley and Son's set of Newport hames.
H. A. Thompson's workman's drainage bevil.
Lawson and Son's collection of seeds.
Robert Lane's one-horse cart.
John Kendall's one-horse cart.

The decision as to the steam ploughs has not yet been published.

The following is the

OFFICIAL REPORT OF THE JUDGES ON THE REAPING MACHINES:—

"The trial of reaping machines commenced at Salisbury on the evening of Saturday, July 18, in a field of rye, a very moderate crop, and very foul. The different portions of ground were marked by the stewards, and the lines dividing the portions were cut out by Mr. Crosskill's machine in a most efficient manner. For this work it has a decided superiority over the other machines exhibited, but which superiority was counterbalanced by the very easy and accurate work of Messrs. Burgess and Key's machine, which was brought out with the new addition of a spiral screw on the side of the machine next the standing corn, which caused all the corn it touched to be brought inwards, and thus conducted to the platform so that the swathe was laid in the most regular form, and perfected the side delivery. The horses walked at a moderate pace, and the only person attending the machine was the driver of the horses. To this machine the judges unanimously allotted the first prize. The other machine of Messrs. Burgess and Key we highly commend for very efficient work. Mr. Crosskill's work was well done, but the swathe was not so well laid, nor so good and even a stubble left as by Messrs. Burgess's; and this, we believe, was caused by its not being well adapted to cut across furrows, and to make perfect work; and the scattered straws left on the swathe, we think, were owing to a fault in the construction of the endless band for the side delivery. This machine has two men to work it, but cuts fast, though the power required is more than that which is consumed by Messrs. Burgess and Key's machine; we therefore give it the second prize. The third prize we allotted to the machine exhibited by Lord Kinnaird, which worked well, but we thought the horses were driven too fast for farm horses; and the machine, although cheaper than those spoken of above, was not to be compared with them for workmanship. The driver was the only attendant necessarily required. Dray's Palmer's machine reaped beautifully, laying the sheaves ready for tying, and not requiring instant tying, as it delivered them on one side; but the price charged for it would be far too much for us to recommend to farmers, but we highly commend it. Two men attended this machine. Dray's Hussey's machine worked as it has done for two or three years past, but the sheaves must be instantly tied, to prepare the way for its turning; two men are requisite. We must here observe that those machines to which we have awarded prizes are capable of cutting all sorts of corn, while those of Messrs. Dray are only, strictly speaking, 'reaping machines;' and while the present system so largely practised by farmers, of growing seeds with their barley crops, continues, on those farms Messrs. Dray's machines are not of general utility; but we allow that when the reaping of wheat only is an object, and if cut when fit for immediate tying, Messrs. Dray's are excellent machines, and their Hussey is cheap in comparison with all the others. On referring to the report of the trials at Leigh Court in 1855, we feel perfectly justified in reversing the decision arrived at last year at Boxted Lodge, when there was evidently a great fault in the construction of the machine shown there by Messrs. Burgess and Key (and which fault lost them the first prize), but is now rectified by the addition of the spiral screw. We quite agree with the distinction made at Boxted between mowing and reaping machines. We wish, therefore, that the public should fully understand that for general harvest purposes we most highly approve of those machines to which we have now given prizes, each having a side delivery, and commend the machines of Messrs. Dray for reaping only. We conclude by saying that we think any further remarks needless, for to give any description of the above machines would be only to repeat the excellent report of the judges who attended at Leigh Court."

THE DINNER

Took place in the Council Chamber, Lord Portman, in the absence of the Duke of Richmond, presiding, supported by the Right Hon. Sidney Herbert, M.P., Sir W. Medlycott, Sir E. Hulse, Bart., T. H. Sotheron Estcourt, Esq., M.P., E. Antrobus, Esq., M.P., M. H. Marsh, Esq., M.P., W. J. Chaplin, Esq., the Mayor of Salisbury; Monsieur Bortier, of the Agricultural Society of Flanders; Monsieur Serrys, Monsieur Bellar, — French, Esq., Vice-President of the Agricultural Society of the United States, Monsieur Bullar, Mons. Dutrône (Conseiller Honoraire à la cour d'Appel d'Amiens), Count G. De Wezell, Mons. F. de Guarla, Prebendary Fane, and Messrs. John Cother, Stephen Mills, H. Wilson, Ralph Ettwall, — Lawrence, W. J. Chaplin, — Caldwell, — Druce, &c.

After the usual Loyal Toasts—

Lord Portman introduced to the Meeting, Mr. French, the Vice-President of the Agricultural Society of the United States.

Mr. French, said his mission to this country was principally agricultural, and he had left his own country with the Yankee spirit of inquiry to spy out the land in this country. He came here to learn, not to teach, and considering his object he was fortunately situated in being present at the meeting of the Royal Agricultural Society of England. He had scarcely had two months yet to see the agriculture of this country, but he had observed carefully during that time the differences that were manifest in this country between its agriculture and that of America. He observed here a more thorough, a more systematic course of agriculture, a better system, a more profitable, a more money-making system. That difference was the result of certain facts which he would point out: The first was, that land in America was very cheap, it could be bought there for five English shillings an acre. That was the price there, and therefore any man in America might have as much of the public domain as he pleased by entering and purchasing from the public land office. Land being so cheap, was not so well cultivated, and was generally worked for present profit, and as soon as the present profit ceased it was left, and a new piece of land was procured. Another fact was, that for the labour on the land, 2s. was paid in America for 1s. in this country. The price of labour in New England was 5s. a day, that was, he thought, the lowest estimate, and he thought that was double the average price paid for labour in England, so that they would see that the Americans were embarrassed in their operations by the price of labour, but from the mode of cultivation they could not afford to lay out the kind of labour that was laid out in this country. (Hear, hear.) He might be allowed to boast a little, as they had, he was glad to say, taken the first prize for mowing-machines; that was a proof, not that they had superior and better genius, but another illustration of that maxim, that "necessity is the mother of invention." (Hear, hear.) If they had been obliged to pay 7s. a day for mowing their hay, as he had done on his farm in America, he thought, like Yankees, they would have set themselves down and thought a little more sharply upon this subject. (Hear and laughter.) The Yankee sat down thinking he had got 7s. a day to pay, and his acres must be cut, and so he set to work to construct a machine, and beats all England. (Laughter.) Then, again, another principle (he was not going to give any opinion upon our laws)—and that principle was, that in America there was no law of primogeniture—they ought, of course, to have it, but he did not admit they were wrong in anything. (Laughter.) In America, if a man had a thousand acres of land, and he had died without a will leaving ten children—and they were very apt to have ten children there (renewed laughter)—the land was divided into ten parts, and the result was very small holdings of land. There was not that system of farming large farms in America that there is in this country, where the steward of any nobleman has charge of a large estate, and the only way in which they compensate themselves in America was by educating their people better than we do, and by and by they would compensate themselves for the want of the general system of farming, which was very much wanted in that country, where there was no law of primogeniture and no large estates. In order to make the land pay, capital was necessary, and the farmers in America had not yet found that out. They had done so here in this country, and understood that the best investment was in the improvement of the land. In America the farmers invested their money in buying railway and other stock; in that they were wrong whilst we in England were right (Hear, hear). The position of agriculture in America might be illustrated by the case of a person who had no money, and whose only capital was a tolerable education: he could read, write, and cipher, or "calculate," as the Yankees call it, and he goes into the wilderness. He could not sit down and read books; his business is with the question of how bread is to be provided. He cannot consider what is best for posterity, and what is the best system of agriculture; but the question is, how can he get maintenance for the next year for his wife and chilldren. Then he must build a house, and if he has any neighbours they help him to build a log house, and it is built in a day, which answers his purpose very well. Then he had an occasional fight or brush with the Indians, and, further, he had a variety of matters to attend to, such as making his fences, and by and by he gets settled, if he does not go west, as he generally does two or three times, and so he goes on improving the land. The farms in America are one vast settlement, and how much land there was he did not know, but when he left home there were 31 States, and how many there were now he really did not know (Laughter and cheers). To give an instance of the mode of progress, 25 years ago there was a place where there was a wilderness, in which there was nothing but a few fishing houses, and the other day the inhabitants numbered at least 110,000. Then, too, they made roads—the farmer, pioneer—and in the State of Illinois according to a recent statement, there were 2,660 miles of railway in that one single state; so that getting the land gradually cultivated they had a country with the Atlantic on the one side, the Pacific on the other, and the Gulf of Mexico on another, and the very best kind of neighbour, in Canada, on the north (Cheers). They were thus in a position to learn agriculture; and they came here to this country, from whom they derive common parentage and common law, they came here, as to the mother country, to learn agriculture—he came to this society as the representative of agriculture, and he therefore took the liberty to propose as a sentiment, "Prosperity to the Royal Agricultural Society of England. (Loud cheers).

The Right Hon. **SIDNEY HERBERT, M.P.**, said: I hope you will allow me to express the satisfaction with which I think we all have heard the excellent speech as delivered by the representative of our eldest daughter (cheers). It is quite true, I believe, as he (Mr. French) says, that "necessity is the mother of invention." I think that we shall have, before long, to apply some such spur and stimulus to our power of invention, in order to enable us to compete with the difficulties with which we are now obliged to cope. In looking to-day at the show, I was very much struck with that to which naturally I paid more attention, as a Wiltshire farmer—I mean the sheep that are shown. Now I want to ask of you practical farmers—which I am not—how you intend to meet this great difficulty of the rearing of sheep? We have, I believe, done something towards it. Ten years ago, we never, I believe, thought that two years were necessary; and now, we can rear sheep in one year. The result is that, during the last ten years, we have eaten thirteen generations of sheep. Now I maintain that, having done so (and Mr. Mills will correct me, if I am wrong), and made sheep into mutton in one year, we have got no margin left on that side. I therefore say that the man who would make one blade of grass do the duty of two, would be a national benefactor; and I want some other persons to be national benefactors, and either to do that, or make them breed twice a year; for, by-and-by, some method must be found to increase the quantity of store stock (Hear, hear). The toast I have got to propose to you is one you will receive with the greatest pleasure—that of the first commoner in England, the President of this Society. I believe, in any Society, if unconnected with agriculture, we should with enthusiasm drink the health of the Speaker (Hear, hear). It would have been a great satisfaction to him to have been here to-day; but he has got a flock to manage which is not quite so manageable as some of the flocks we have seen to-day (Hear, hear). They are not remarkable for their evenness or their kindliness; and that is one of the greatest points in breeding. But I do not like to propose this toast without first mentioning that the President has served the Society by writing, in the *Agricultural Journal*, on the question of the Duke of Portland's water-meadows. He had also the honour of representing this country at the Paris Exhibition, on which occasion the Emperor of France was elected a member of the Royal Agricultural Society of England, for his services to agriculture. He thus sowed those seeds of friendly rivalry and good fellowship to which we now owe the presence of so many distinguished gentlemen who have honoured us with their attendance. The last good deed which the Speaker has performed has been, to put an end to the differences between the Government and the merchants of Liverpool, with regard to the obtaining of guano; and, in consequence of the success of that negotiation, the Liverpool merchants have promised to produce 100,000 or 150,000 tons of guano—an amount which promises to make turnips rise so rapidly, that the existence of the fly will be entirely destroyed. I think we owe the Speaker a deep debt of gratitude for his interference (Hear, hear). On this point, before drinking his health, I will only say we earnestly hope that the efforts which have been made, and which have done so much credit to the Mayor and the gentlemen of the city, who have assisted in contributing in any way to the success of this meeting, will, we trust, convince the Royal Agricultural Society that we have done all we can to merit the honour they have conferred upon us (loud cheers).

Lord **PORTMAN** having acknowledged the toast, begged to propose the health and the thanks which the Royal Agricultural Society most deeply owed to the Mayor and Corporation of Salisbury. They all knew what the Mayor of Salisbury had done on that occasion, and more than a year ago. They knew that when Salisbury was a candidate for the meeting here, he told them that impossibilities could not exist; what was necessary must be done, and it had been done (Hear, hear). When they had a man of that kind at the head of that great corporation, they could not fail to find that success would attend them (Hear, hear). He ventured, in the name of the Royal Agricultural Society, to tender to the Mayor their best thanks for his kindness and courtesy—he might say, almost, the providence—he had exerted for the success of the Society (cheers).

The **MAYOR of SALISBURY** said his duties for the last week had been of so arduous a character, that he really had not had time to prepare a speech for this important occasion; he therefore trusted they would take the will for the deed. On the part of the corporation of this ancient city, he begged leave to tender them his cordial thanks, and he was highly gratified to find such an assembly of gentlemen within these walls. He could not express to them in sufficient terms what he felt upon the occasion for the honour that had been conferred upon Salisbury in having through their streets the Prince Consort. Another matter of congratulation was that the Royal Agricultural Society had come into the capital of Wiltshire; and having done so, he hoped they might learn something to be of use to them. Looking back, a great improvement had taken place in forty years on the Wiltshire downs, and he trusted all would see them before they left the locality, and they would then be able to judge what progress had been made in agriculture in this county. They would there see that Mr. Stephen Mills, a gentleman he was proud to call his friend, had done much for the benefit of agriculture in this county. He was proud that Mr. French had come amongst them, and that the agricultural classes of this country are a very contented and respectable body of men; and he believed that nothing would tend to improve agriculture more than the improvement of the agricultural labourer. He was proud of the distinguished honour of being a member of the Royal Agricultural Society, and thanked his fellow members of the corporation for the assistance they had rendered him. He hoped they would enjoy health and happiness, and that they would sometimes look back with pleasure to the visit they had paid to the ancient city of Salisbury. He thanked them for the honour they had done him, and regretted not being able to make them a speech worthy of that important occasion (cheers).

Mr. **MARSH** gave "Agriculture, Manufactures, and Commerce," acknowledged by Mr. Estcourt, who proposed "The Labouring Classes"; and Mr. Wilson next gave "The President."

Lord **PORTMAN** in responding said he felt it his duty to do everything in his power to promote the object it had in view—everything to serve it (Hear, hear). He was quite of the opinion which had been previously expressed, that it was not the way to say, "I am going to do this and that," but go and do it at once (cheers). They must pull altogether, and help together, and everything they hoped for would have a successful issue (Hear, hear). He always thought it exceedingly useful for the Society to have those experiments made, the fruits of which they all witnessed, as that was the way to be successful. When these successful experiments are made, the results should be laid fairly before all parties, in order that they might be enabled to judge of the results (Hear, hear). For himself, he had never flinched from his duty in that respect, and, as far as he could, he did not intend to do so. If there was anything in the Society where work was required to be done, in order to promote its larger usefulness, he could only say that he would devote all his energies to assist the production of such great results as must necessarily follow, and he was certain that every other person who heard him would do the same as far as possible (Hear, hear). He was very sorry to say or do anything that might, perhaps, interfere with the operations of the Society, but he must say that great efforts lately had been made to bring the expenses of the Society within moderate bounds, and those efforts must be continued (Hear, hear). It was not formed to promote an object in one place alone, but to forward the interests of agriculture throughout the country, and that being so everything must be done to carry that object out (Hear, hear, and cheers). If there were persons who thought that the Society should not have support, he should be thankful if such persons would tell them where they were wrong, teach them to do better, and they might depend upon it that every member of that Society would always do his best (Hear, hear, and cheers). He had been a working farmer, he was sorry to say, for a period now getting on for fifty years, and he thought he could say a word or two upon that part of the question. He held that no man should begin experiments without the necessary capital to carry them out, that he should let his neighbours as well as himself watch for the results of his experiments, and if they were found to answer he would meet with that encouragement to which he was entitled (Hear, hear). With respect to himself he had reduced his farm to very small dimensions, maintaining only so much as would keep sufficient stock for his own diversion or amusement. He was most firmly of opinion that no landlord thoroughly understood the realities of farming who had not himself been a farmer. How could a landlord know the difficulties which a farmer had to undergo unless he had known something of those difficulties himself? (Hear, hear). He (Lord Portman) did know those difficulties, for he had learned them by experience, and he hoped he understood, and did not undervalue them (Hear, hear). If a landlord always did this he would gain a vast amount of practical information which could not fail to be of the greatest possible service to him, and he (Lord Portman) could add that the acquisition of such practical knowledge was one use to which a landlord could put his capital, and that too, in a way of the utmost benefit to himself and his tenants (Hear, hear, and cheers). He did not wish to bore them with a long speech (" go on," " go on"), but he would at once conclude by thanking them for the very kind manner in which they had responded to the toast, and he hoped to see them all enjoy long life and happiness (cheers).

" The Railways" having been given,

Mr. Badham, of Ipswich, said he thought it right upon the present occasion, after the toast which had just been drunk, to state that the Eastern Counties Railway had not thought fit, although it reaped an abundant harvest upon the last meeting of the society at Chelmsford, to convey the cattle free to the present great meeting at Salisbury. He made no complaint against the company for not doing so, for of course if they had thought it right they would have done so. He deemed it expedient that the fact should be mentioned at that meeting.

Mr. Stephen Mills proposed the health of " The Stewards and Judges of the Show" (cheers).

Mr. Caldwell, in rising to return thanks for the honour done him, remarked that he had been a judge for three or four years past, and they had complimented him in a very gratifying way. He would take that opportunity of alluding to those men who had made implements, and say that they were not present at that meeting. These men had sent circulars to the farmers respecting their machines, and had spoken of their medals obtained for prizes at the shows, but not one of them had come to that meeting (disapprobation). Something had been said about the report of the judges, and, as he knew something about it, he would say a word or two more. He perfectly agreed with Lord Portman that it was better to hear the report read than to read it six months afterwards. He had been a voluntary judge of one description of stock, and he could tell them that the Council of the Royal Agricultural Society distributed those prizes to the best of their ability and knowledge (Hear, hear). He would again revert to the manufacturers of implements. These men, who had made large fortunes by the sale of implements, told the farmers that they would produce a certain kind of machine, and no more than they thought might be wanted. He thought that was not proper language to use ; and if they would allow him to speak his mind, he would, as it was the last time he should be a judge of the Society, offer some few observations upon the way in which the judges had examined the merits of the stock, and what himself and brother judges had done in their several departments.

Lord Portman : I must ask you not to say anything before the report comes before the Council.

Mr. Caldwell : We have tried to do our duty conscientiously, and the judges never tried otherwise (Hear, hear). He would thank them for the honour done him, and conclude by hoping that they would not set the bad example of some machine makers, whose fortunes had been made by them. Those men had been well supported, and they ought to behave in a very different manner (Hear, hear).

Mr. Dickenson, as one of the judges of horses, also responded.

The Rev. E. James gave "The President Elect," and the meeting shortly afterwards broke up.

THE GENERAL MEETING

was held on Friday, at 10 o'clock, Lord Portman presiding.

The Chairman opened the proceedings by stating that this was one of the three general meetings held in the year, when every member was not only at liberty, but was invited, to make any suggestions which he believed to be for the interest of the society.

Mr. Raymond Barker moved a vote of thanks to the Mayor and Corporation of Salisbury for their great assistance in carrying out the arrangements for the show. The zeal, courtesy, and energy of the mayor had been beyond all praise, and to him they were greatly indebted for the success which had attended their efforts.

Mr. C. Barnett seconded the motion, which was carried unanimously.

The Mayor having acknowledged the compliment, similar votes of thanks were given to the local committee, and to the Right Hon. Sidney Herbert, Mr. Rawlence, Mr. Squarey, and Mr. Mills, for throwing their farms open to the inspection of the members.

A like vote having been proposed to the railway companies for the facilities afforded,

Mr. Sidney said that he believed the time had arrived when it would be convenient for him to address a few words to the meeting. When their first show was held, the Great Western system of railways had only just come into operation, and they might trace all their success to the extension of the railway system ; for, in the first instance, the implement-makers had to send their implements by the road, thereby adding 50 per cent. to their value ; whilst now they were readily placed on the ground by the railway. He was gratified at the results of the meeting; but he must warn the council and the members not to be dazzled by the success of the show, as there was a great deal of dissatisfaction abroad with respect to their proceedings. In the first instance, he would suggest that one of the three meetings of the year should be held at such a time as it would be convenient for the members to attend—it appearing to him that they were not now held as conveniently as they could be. He spoke as the exponent of the opinions of others, and he had no hesitation in saying that a great deal of dissatisfaction existed amongst the tenant-farmers at the management of the council. He warned them that they had already met with one failure in the dinner, and others would follow. Instead of the large and magnificent attendance they had at the dinner last year, they had but a very poor attendance this year. He did not believe that was wholly owing to the raising the price of the tickets, but to a feeling prevailing amongst the farmers that it was an attempt to narrow the management of the society, and make it even still more a family party than it was at present. Again he would tell them they must not be dazzled by the success of one show. What was now the state of their funds? They had been in existence nineteen years, and had had 5,000 members ; yet they ought to have double the number. Why was it that the society was not so well supported as it ought to be? In the first place it wanted publicity. Their arrangements were kept too quiet. It was true they knew the Society held a meeting on the second Wednesday in the month, when perhaps a paper was read of interest, but that was uncertain ; and if they went, they might hear a paper of no interest whatever. They ought to let it be known what would be read, and invite the attendance of the members of the press. Then as to the " Journal ;" what could be the good of telling them in 1857 what took place in 1856 ? Another, though older society—the Society of Arts—found itself in a declining position two years ago, when some gentlemen took it in hand, and established a weekly journal. It was true some gentlemen might object to what took place at those meetings being reported. If the papers brought before them were good, every time a notice of them was published it would bring to them an accession of numbers ; and if they were bad, they might depend upon it the reporters would not notice them. Another thing required was an infusion of a greater number of practical farmers on the council of the society, the feeling being that it now comprised too many gentlemen and too few working men. Again, with the number of implements entered for trial, it was impossible they could be properly tried unless they had a paid field-steward to superintend the arrangements, as they could not expect gentlemen, however zealous they might be, to give their time and attention to all the details, so well as a regular field-steward could do.

Mr. **Robert Smith** thought it was somewhat inappropriate to make these complaints at the close of a meeting which was admitted to be a brilliant success.

Lord **Portman** was obliged to Mr. Sidney for his suggestions. With regard to the periods of holding their meetings, there were great difficulties in holding them. The Christmas meeting they could only hold on the Saturday lest they should interfere with the Smithfield Club; and this meeting could not well be held otherwise than on the Friday, at the close of their meeting. The meeting of the 22d of May was the one which the original founders had designed for the discussion of their general business, and it was held at 12 o clock in the day as the most convenient for all parties. He would say, however, that it had been under the consideration of the council to hold the show meeting at a different period of the meeting, and the distribution of the prizes at the same time; but they had not found it convenient to carry it out this year. With regard to the dinner, the council could not justify the expenditure of half the society's income for such a purpose, as it appeared they could not get up a large dinner without a large expenditure, and besides, it was thought it would more benefit them to encourage a number of dinners all over the week. With regard to the journal, he was sure the matter would be duly considered by the journal committee, as it was well known that stale news was no news at all, and when kept became of no value. It had always been their desire to have one-half of the council practical farmers; but though several good men had been put on at different times they could not be prevailed upon to attend more than once or twice, and they were therefore obliged to keep those who would work. In May the whole of the vice-presidents, trustees, and half the council went out of office, not necessarily for re-election, but the subscribers had then an opportunity of putting in office who they pleased. With respect to the field-steward, that was opening up a large question; but he believed it was generally admitted that it was desirable such an officer should be appointed; as well as another to take the more general superintendance of the show yard, as it would not do to depend too much upon voluntary services, however valuable they might be. He was convinced his noble friend the new president (Lord Berners) would do his best to promote the interests of the society, and he trusted the subscribers would continue their confidence in the council until the meeting in May next (Hear, hear).

Mr. **Neville Grenville** knew that out of doors there was some dissatisfaction at the management of the society. Their society was a company with the largest number of shareholders in the kingdom, whilst they had the smallest voice in the management. He knew that the members of the council could do no wrong, and probably they agreed with a noble lord who had expressed an opinion that the most perfect of all governments consisted of ministers who were elected for life, and nominated their successors (laughter). He agreed with a good deal of what had fallen from Mr. Sidney. Now, with regard to the holding of the general meeting after the show, he would suggest that it be held in the same manner as the meeting of another society, with which himself and the noble lord in the chair was connected—the Bath and West of England Agricultural Society. That society held its meetings in the ground; and though there was a good deal of general conversation, he had no doubt it mainly contributed to the prosperity of the society. He was one of those who was disappointed at the abolition of the Pavilion dinner. Luckily he lighted on good quarters, but he knew several of his friends came from Salisbury yesterday with the intention of attending the dinner, and were obliged to go hungry away. He agreed with the chairman that it was not justifiable to expend a large portion of their funds upon the dinner, but any material loss under that head, he believed might be avoided by proper management. He would again direct attention to the Bath and West of England Society, where they erected a canvas pavilion for £15, and, as they received something from the contractor for the dinner, instead of losing anything they were something in pocket (Hear, hear). He would now take the liberty of calling attention to the future. Next year they were to hold their meeting at Chester, where they would have the support of all Manchester and Liverpool; and, as they would have plenty of funds, he hoped they would endeavour to make the show as attractive as possible to the general visitor. However perfect their show was in useful and good stock, he thought there was a deficiency of eccentricities. At Norwich a noble relative of his, who took great interest in such things, exhibited some of the large Roman cattle, and though they might not possess such good points as the shorthorns, he believed they were much more attractive. He would suggest, also, that as they would be next year so close to Wales, they should offer a prize for ponies—one of the most beautiful animals in the present exibition being a pony, which did not obtain a prize There was another animal, and one which the poor man could keep, which they ought to look to, he meant the donkey (laughter). He was prepared for that laugh. The donkey had no attention paid to it; it was badly bred, over-worked, and much abused, and he should like to see prizes offered for the best donkey, to go into the pockets of a labourer (cheers). Again, when present at the distribution of the Victoria Cross, the other day in Hyde-park, of which, by-the-bye, he saw very little, he could not help being struck by the mganificence of the mules drawing the ambulance waggons, and he did not think it would be out of place to give prizes for the best mules.

Lord **Portman** said they could not propose prizes in anticipation of their receipts at Chester. Where they expected the most they often got the least; for instance, the show at Liverpool was the worst they ever had.

A **Subscriber**.—You must recollect that was 15 years ago.

Mr. **Raymond Barker** stated that the local society of Chester was itself going to give £1,500 for special prizes next year. The losses upon the dinners had arisen from their having to contract for 1,000 persons when perhaps not more than 600 or 800 attended. The total receipts at Chelmsford last year were only £3,700, whilst their expenditure was £5,500.

Mr. **Acland** in proposing a vote of thanks to the Chairman advocated the continuance of the dinner; and in doing so referred to Mr. Jonathan Gray, a gentleman connected with the West of England Society, as one who might be consulted with advantage. Mr. Gray had a plan for putting up almost any amount of canvas covering, at the most trifling expense. This method had already been adopted by the Government, and he (Mr. Acland) was quite sure that Mr. Gray, as a private gentleman, would be happy to give every assistance in his power to this society. Mr. Acland proceeded to say that it was highly important that this society should have the opinions of the practical farmers to guide and influence them, and that everything should be done to insure their attendance at their general meetings. At the same time the council should be careful to notice whence complaints really emanated. They were too often, with some people, but the excuse to make for themselves a little petty importance, or to indulge in the opportunity of delivering a fine speech (Hear, hear).

The vote of thanks to the noble Chairman having been duly given, the meeting broke up.

THE BULBRIDGE WATER-MEADOWS
AND
THE WILTON MODEL FARM.

Irrigation, the first application of science to agriculture, is of such growing importance, that our readers will perhaps be glad of a few prefatory remarks before we proceed to describe our visit of inspection to the water-meadows now in the occupation of the Right Hon. Sidney Herbert.

In 1854, the land under irrigated meadows was 1,292,329 acres, which is equal to nearly half the land under clover and artificial grasses. The manure which comes from the live stock fed upon these meadows enriches the arable land, and, saying that in England and Wales the proportion of land under corn and under grass is as three to one, we have the three acres of corn land enriched by the one acre of meadow, folding being common upon this system. In France the proportion is as nine to one, so that the manure from the one acre of meadow has to suffice for nine acres of arable; and, knowing that the average produce of wheat per acre in England is double what it is in France, we must recognize the importance of attention to irrigation as a grand means of increasing the general production of our soil. There is some sense in the fear that land would sustain loss through the sale of its marketable commodities; but M. Boussingault assures us that, where the system can be introduced, its advantages will be found to preponderate over any ill effects.

These advantages may be described as many. We have an account from Mr. Smith of the result of a water-meadow which he laid out near Woburn, for the Duke of Bedford—

In March, 240 sheep, for 3 weeks, at 6d. each per week	£18	0	0
In June, mowed 18 tons of hay, at £4 per ton	72	0	0
In August, mowed 13½ tons	54	0	0
In September, 80 fat sheep, for 3 weeks, at 4d.*	4	0	0
	£148	0	0

It then fed lean bullocks (the feeding not valued) equal to £16 13s. 6d. per acre.

Mr. Pusey compares the result with the feed afforded in Lincolnshire by a thoroughly good crop of turnips, said to keep 10 sheep an acre for five months, and with good grass land, which fattened 7 sheep per acre in the five summer months. Admitting the 7 fattened sheep equal to 14 of his kept merely in store order, the account would stand thus comparatively—10 sheep on an acre of turnips, 14 on an acre of superior grazing land unwatered, and 36 to an acre of moderate land watered. Mr. Pusey's investment in irrigation in one of the dry inland counties has yielded 30 per cent. on capital sunk. These authorities could be added to, but we will not adduce more; we will merely say that there are four ways of irrigating—1st, *Bed-work* (the most efficient and costly); 2nd, *Catch-work* (suited to both level and uneven ground); 3rd, *Subterranean* (from water being supplied upward to the surface through drains in the subsoil); and 4th, *Warping*. The meadows we visited were an example of the Bed-work system.

There are certain requisites to a perfect system of irrigation. The fall must not be less than 2 feet in 300 yards: the field must be thoroughly drained, unless the subsoil is chalk, sand, gravel, or fissured rock. No part of the water-meadow should be upon a dead level, and every drop of water while irrigating should be kept constantly in motion. In the construction of a water-meadow, the drain which brings the water from the river should be of a size depending on the quality of water wanted; its bottom, at the junction with the river, being as low as the bottom of the river, in order to carry away as much mud as possible. The stuff taken out of the conductors to be employed in equalizing its banks and filling up irregularities in the meadow. We have then, as necessary to this system, a dam, sluices to conductors, conductors, feeders, small drains, main drains, and stops in conductors in feeders. The land by being thus intersected by drains, is thrown into a series of beds differing in width according to the tenacity or porosity of the subsoil—the tenacious ones requiring from 15 to 30 feet, and the porous ones 40 feet. A bed of 200 yards in length requires a feeder of 20 inches in width at its junction with the conductor, and it should taper gradually to the extremity, which should be 1 foot in width. The taper retards the motion of the water. Those small drains which discharge into the mains are the reverse of the feeders—their tapering ends lying up the slope, and their wide ends open into the main, to accelerate the departure of water. Stops are always found to equalize the flow of water and break up the meadows into a series of levels; but where the spirit level has worked truly and the spade truly followed it, there is no heed of them.

The reader may now join the inspecting corps, which surrounds Mr. Rawlence's hospitable house, where its members have been directed to meet. Everybody is wanting to know the name or title of his neighbour, and the bearded presence of several foreigners excites a friendly, not an obtrusive curiosity. Well, the gentleman on your right is Mr. Rawlence, a tenant upon the Pembroke estate; his, on your left Mr. Squarry, who reads the paper on Irrigation to-night; Mr. Coombs, too, the greatest authority on the subject, and by whose peripatetic lecture we are to benefit presently, stands, somewhat bent with age, a little ahead. There M. Barrel, the editor of a French agricultural magazine; M. Mazier, inventor of the French reaping machine, chatting fluently; behind is Mr. Druce, Mr. Bullock Webster, Mr. T. D. Ackland; and the Right Hon. Sidney Herbert is now alighting from the carriage in which are seated Lord Willoughby D'Eresby and Lord Walsingham. The veteran Coombs leads the way: let us follow. Here we are on the Bulbridge Water-meadows. There are, we believe, 98 acres, stretching along by the side of the river Nadder, whose pure waters, taking their rise at the base of the chalk hills and flowing out of the green sand formation which underlies the chalk, are guided by science to cast beauty and abundance about them. This stretch of land is enclosed on the reverse side by a great catch drain, and from this to the river are cut *mains* which intersect this plot in five different places, furnished with sluices, and cutting it up into so many fields; from these mains run at right angles conductors, and from these also at right angles feeders, as already described. The ground is not under-drained, being of one of the porous classes for which we claimed exception. These meadows were formed two hundred years ago by the Pembroke family, with a few modern additions, modifications, and improvements; their value has been at the lowest calculation quadrupled, and in many instances much more increased in comparative value even than that. The system of management, so far as we can ascertain, is this: On the 1st of November remove all stock, and commence winter irrigation, which may be resorted to two days in six, *i. e.*, cover them two days, draw off the water six. On the 1st of March all the ewes and lambs are to be put on the first piece that comes in course, and, after feeding that for a week or ten days, moved on to the second and fourth, and so on till they have gone the round and are shifted to the clovers that are then ready; the meadows are then irrigated two days in two or three weeks, and a crop of hay is mowed successively from them, averaging 1½ tons, when they are again irrigated, and fed off with cows during the autumn.

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* In Wiltshire these meadows are never fed with sheep after the hay crop, but with cows.

Sheep are never put to feed these meadows after the hay crop is taken: if they are, rot is certain to attack them.

Attention is directed, as we proceed, to the fact that the better the declivity the better the grass, and it may be seen that where the fall is 1 foot in 72, the grass is scant and poor in comparison with what it is when the fall is 1 foot in 16. Hoping to hear a fuller explanation from Mr. Squarry, we leave the water meadows, and crossing Mr. Rawlence's farm, where turnips are being sown, and where a flock of improved Hampshire lambs awaits our inspection on the clovers, we arrive at Mr. Herbert's model farm.

Here let us remark that about eleven years ago Mr. Herbert took this farm into his own management. It was then very foul and poor, as certain figures hereafter to be detailed will show, and he commenced a spirited course of improvement, aided by Mr. Robson, the Agent for the Pembroke Estates, determined to give a true and certain sound to those who were likely to follow in his path. We see nothing, then, but good husbandlike management, based upon maxims that have grown out of the union of science with practice, and plain serviceable buildings. No show, no extravagance. At the onset, then, he proceeded to dispute a fallacy with respect to the unprofitable character of root and green crops, and so laid his plan for two-thirds in such crops and one-third in cereal crops, and has practically exploded it, for not only has he shown a great increase in the grain produce since 1846, and a fair return upon capital invested, but he intends forthwith to equalize the share devoted to the cereal and root crops, *without reducing the number of cattle and sheep in any way.* The farm consists of 260 acres.

The system of feeding is this: there are about thirty boxes, and these are always filled. Here are 7 calves, 7 yearlings, 7 two-year-olds, and from 7 to 8 drape cows. Calves come in as the two-years-old go off fattened. The boxes are bedded with sawdust, and when these become inconveniently full, the contents are emptied into a covered manure yard, there to be mixed with dissolved bones, ashes, and other refuse, as compost for the drill. The cattle are fed with equal parts of oilcake and barley-meal, mixed with chaff, with tares in summer and pulped roots in winter. The breed is shorthorn, and in some instances the Alderney is crossed with the shorthorn, yielding the best possible results. The buildings are of stone, constructed with every regard to efficiency and economy. The crops are the pride of the neighbourhood, and the excellence of the mangold crop attracts special notice. Amongst other matters of interest the little experiment on the Lois Weedon system, which has been tried for four years, does not escape notice. On gathering some of the splendid ears of wheat so grown, we are told that the average produce is from 30 to 40 bushels.

Instinct seems to draw a considerable number of people together at this juncture about the Park gates. There is to be a grand luncheon in the Wilton House, and so the fact needs no explanation. We are invited to attend, and the reader may accompany us across the green sward of the Home Park, and beneath the shade of the lordly trees—arrived at the great glass doors that enter from the library upon the Italian garden, he may avail himself of the ladies' privilege of looking on.

A princely spread it certainly was. The tables were laid for about 500 guests, but not more than 200 partook of Mr. Herbert's hospitality. Amongst the latest arrivals were Lord Rivers, Lord Ernest Bruce, Sir Edward Hulse, Sir J. Johnston, the Hon. W. H. B. Portman, T. Pain, Esq., Mayor of Salisbury, the Rev. C. T. James, Mr. Bullock Webster, Mr. Robson, &c.

As soon as our thirst and appetites were somewhat appeased by the substantialities and delicacies upon the table, Mr. Herbert rose, and, after silence was obtained, said, that he had determined to disburden his mind of a balance sheet, not with the idea that he should receive much credit therefrom, because the human tendency to believe had come to be very very small in such matters. He did think, however, that as a specimen of gentleman farming he need not be ashamed of the result. A few years ago we heard a great deal about the change effected upon Lincoln Heath; but I think you will all admit, without attributing it to any special partiality for this district, that the change effected on Salisbury Plain may fairly claim comparison with it. It is true we never had a lighthouse to guide the traveller over the plain, but we had plenty of chalk heaps. It was the only instance in which the soil was ever turned up. But the aspect of the plain is strangely altered now, and perhaps there are some of us who in one sense may almost regret the change; for no place carried scent better than Salisbury Plain. But the difference between five shillings per acre and fifteen will, I have no doubt, outweigh the consideration of sport; whilst there is this advantage to be taken into consideration with it—it has led to increased occupation, and a proportionate increase of comfort amongst the peasantry of this county. My farm consists of 260 acres, 186 acres of which are arable. In 1846 the crops were estimated to be 26 bushels of wheat, 28 of barley, 32 to 36 of oats, and the farm scarcely equal to the maintenance of 150 ewes with their usual number of childer lambs. The stock kept since 1850 are 9 horses, 261 breeding ewes, 101 shearling lambs, 6 to 7 calves, 6 to 7 yearlings, 6 to 7 two-year-olds, and 8 to 9 barren cows. With respect to horses, I must remark that three of them are always engaged upon the parks and demesne grounds. You shall next have a statement based upon the average of five years, commencing 1850, and ending 1855—

BALANCE-SHEET FOR THE WILTON HOME FARM FOR THE FIVE YEARS COMMENCING MICHAELMAS, 1850, AND ENDING MICHAELMAS, 1855.

STATEMENT OF RECEIPTS.

	Receipts of Five Years.			Receipts per Annum.			Receipts per acre on 186 arable land.		
	£	s.	d.	£	s.	d.	£	s.	d.
By grain sold..	1578	7	5½	315	13	5½	1	13	11
Grain consumed on the farm..	1575	15	0½	315	3	0¼	1	13	10
Hay roots, and green crops sold	155	18	6½	31	3	8	0	3	4½
Stock sold	5585	14	8½	1117	2	4	6	0	1½
Hire of horses and implements, being the cost-price for horse-corn, forage, and repairing implements, together with proportionate share for depreciation of team and interest of money	888	6	6	177	13	3½	0	19	1¼
Valuation of stock and crop at Michaelmas, 1855	3759	0	2	751	16	0¼	4	0	10
	13543	2	5	2708	11	9¾	14	11	2

STATEMENT OF EXPENSES.

	Expenses of Five years.			Expenses per annum.			Expenses per acre on 186 arable land.		
	£	s.	d.	£	s.	d.	£	s.	d.
By Valuation 1850	3012	0	10	602	8	2	3	4	9¼
Manual labour	1979	9	10½	395	17	11½	2	3	7
Manure purchased	495	17	3½	99	3	5¼	0	10	8
Seed corn	551	9	9	112	5	11¼	0	12	0¾
Repairs of implements, blacksmith's work, &c.	250	18	5	50	3	7½	*0	5	4½
Stock purchased	582	16	11½	116	11	4¼	0	12	6¼
Feeding stuffs for cattle and sheep	3340	8	9½	668	1	3¾	3	11	9½
Horse-corn, meal, &c.	1066	13	2	213	10	8	†1	2	11¼
Sundries	42	18	1	8	11	7¼	0	0	11¼
Rent and taxes	1500	0	0	300	0	0	1	2	3
Balance in favour of farm, being £5 9s. 2d. per cent. per annum on £2,600, or £10 per acre on the whole area, or £14 on arable, the average capital employed. And this per centage is irrespective of horses, implements, and other dead stock made in the inventory at Michaelmas	709	9	2½	141	17	8½	0	15	3
	13543	2	5	2708	11	9¾	14	11	2

Grain.	No. of acres.	Weight of straw.	Bushels per acre.	Weight per bushel.
		tons cwt.		lbs.
Wheat....	112	1 18	34	60
Barley....	108	1 4	45	49
Oats	88	1 9	57	40
Beans	6	1 17	56	65

The hay, root, and green crop from 1850 to 1855 has been as follows:—

	Spring and Winter Vetches.	Clover and Hay.	Swedes.	Maugolds	Common Turnips.
	tons.	tons cwt.	tons.	tons.	tons.
Best	9 to 10	2 16	26	23	15
Seconds..	—	1 16	12	15	9
Thirds ..	—	1 5	—	—	—

It should be remarked in connexion with the table, that the weight of turnips appears small, because they are often eaten off before they have arrived at maturity.

[The value of unexhausted improvements and increased fertility of the farm being considered as a full equivalent to the expenditure in putting the farm into tenantable condition between 1846 when taken in hand, and Michaelmas, 1850, when this account commenced. The result of this account, under the circumstances of the great outlay in feeding stuffs, and the small proportion of grain crops grown and sold, should however be considered but as the first term of a lease for 14 or 21 years, in which the cost of cultivation would necessarily be more expensive than the latter portion of the lease.]

When the cheering that followed upon the reading of this statement had subsided, Mr. Herbert continued, reading a number of synopses and analyses of the above, and from which we extract the following:

A SUMMARY OF CATTLE ACCOUNT, SHOWING WHAT THE RECEIPTS HAVE BEEN ON THE AREA OF THE ARABLE PORTION OF THE FARM.

	Return per acre, inclusive.	Return per acre, exclusive.
	£ s. d.	£ s. d.
Sheep	2 18 9	1 12 9¼
Cattle	1 6 7	0 10 2¼
Swine	1 3 6	0 0 6¾
Poultry...............	0 1 10	0 0 8
	£5 10 8	£2 4 2½

Or £8 7s. 4d. on grass, and £3 4s. 6d. net per acre on the two-thirds arable, in hay, roots, and green crops, exclusive of the value of forage consumed by the six horses belonging to the farm, and the three kept for the use of the park and demesne grounds.

THE DEAD-WEIGHT PER ANNUM SOLD OFF FROM 1850 to 1855.

	Dead weight sold off per acre on 186 of arable.	Dead weight sold off per acre on entire area of farm.
Mutton ..	90.5	64.1
Beef......	64,1	45.7
Wool	6.6	4.7
Pork	58.8	41.9
Poultry ..	2.5	1.8
	222.5	158.7

Mr. Herbert then concluded with a grand summary of the whole in these words:

"The farm, with one-third of its area of arable land in cereal, and two-thirds in hay, roots and crops, has for five years, by the sale of fattened stock instead of stores, under unfavourable circumstances, increased the yield in wheat from 20 to 34 bushels, barley from 28 to 45 bushels, oats from 32 to 56 bushels; and has paid a full rent, and £5 9s. 2d. per cent. per annum interest on capital employed, with prices averaging—wheat 6s. 10d., barley 3s. 4d., oats 2s. 10d. per bush.; mutton 7d., beef 6¼d., pork 5¼d. per lb.

"The rate of interest realized is acknowledged to be an insufficient remuneration for a tenant's skill in management, risk, and interest in money; but considering the improved condition of the farm, and the security in the occupation or holding, a fair prospect remains for the security of the undertaking."

M. TREHONNAIS rose to propose the thanks of the meeting to Mr. Herbert for his having so kindly entertained them that day. He said it would be difficult to inaugurate a festival of the Royal Agricultural Society of England for 1857 in a more beautiful way than they had done that day. There they were assembled, men from various climes and speaking various languages. But at all events, they came from different quarters, not indeed simply to wander under the beautiful shade of these trees, nor to admire the magnificence of that splendid park, nor to show the hospitality of that nobleman, who for mere hospitality's sake had gathered them under his beautiful roof; but to pay homage to agriculture, to take stock of its laws, and measure the improvement it has made by comparison with its condition in former years. He repeated it, they would have found it difficult to inaugurate it in a more beautiful and interesting manner than they had done that day, not only by witnessing the results of the strenuous efforts which had been made by an English gentleman farmer, one whose example, whose influence, whose talents had been turned to the most beautiful account, benefiting himself in the first instance, and his neighbourhood by his example and

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* Including park team, or 3s. 7¼d. exclusive.

† Or 15s. 3¼d. exclusive.

influence, thus contributing in the best possible manner to the welfare of this country. He wished to propose the toast without any formality—even as they had been received that day by their noble host; for they had wandered through his meadows and admired and praised what they had seen, and were now come to his home, and therefore he wished to propose his health in no formal speech, but with all cordiality and sincerity. (The toast was drunk, standing, with great enthusiasm.)

Mr. **Raymond Barker** rose to support Mr. Trebonnais in his vote of thanks to Mr. Herbert, and he did so as the representative of the Royal Agricultural Society.

Mr. **Herbert**, in reply, said—I am extremely obliged to you for the kind and cordial manner in which you have done me the honour of drinking my health. So far as thanking me for hospitality is concerned, I consider that the favour is entirely the other way. Gentlemen, I feel indebted to you. I must say a special word in reference to this subject to both those gentlemen who have so complimented me. It is particularly gratifying to me to find so many gentlemen from foreign countries attending these meetings. There was a time when rivalries existed, which bred enmities; there was a time when there were rivalries between England and France, which brought Frenchmen and Englishmen face to face; but there has arisen a rivalry since which has brought them side by side. As we have found them trusty and valiant allies in time of war, so we shall find them the most intelligent, most formidable rivals in the arts of peace. And I must also tender my hearty thanks to that veteran agriculturist, Mr. Raymond Barker. Allow me, gentlemen, to propose to you that we drink the health of those foreigners who have this day honoured us with their presence, in the good old English fashion. (Drank in bumpers, with three-times-three cheers.)

The Marquis of **Tweeddale** then proposed the health of Mr. W. Robson, and in doing so, said he felt confident that after what they had this day seen at the Home Farm, everybody would feel a desire to express their admiration of his system of management.

Mr. **Robson** replied in a short speech, that displayed him a man of sterling sense and genuine modesty.

Mr. **Squarry** then read an interesting paper on the subject of irrigation, which we must reserve for next week's issue.

The company then separated, the evening being far advanced. Everyone was delighted with the day, and will possess a pleasing reminiscence of Wilton House, and the urbanity of its occupier.

VISIT TO THE FARMS OF MR. STEPHEN MILLS, AT ELSTON.

To afford some of the strangers who have been staying in the city and neighbourhood during the Royal Agricultural Society's meeting an opportunity of seeing the general management of the light land of Salisbury Plain and its results, Mr. Mills, of Elston, issued, through the medium of the Royal Agricultural Society's advertisement, a general invitation to the council and members of the society, as well as to any other gentleman who might be disposed, to visit and inspect his farm on Friday. The recognised reputation of Mr. Mills as one of the best, as he is one of the largest, farmers of England, would, we had supposed, have attracted a large party to accept his most hospitable and valuable invitation.

The party comprised some of the leading agriculturists and gentlemen of distant and adjoining counties, amongst whom we noticed Major Heathcote, Messrs. Leyland, Wood (Sussex), Green (Marlow Lodge, Ludlow), J. Smythies (Shropshire), Fry (Somerset), Pearce (Devon), Ellman (Glynde), Spencer, Danger, Fouracres (Bridgwater), Galpin, Cull, Moore (Dorset), Marriott (Northampton), Croft (Warwickshire), Farrant (Somerset), Rev. Prebendary Lowther, Revds. J. H. Penruddocke, Wardlaw, Vowles (Somerset), W. Hyde, &c. St.; George Lowther, Nicholls, Wansbrough, Hilder (Kent), R. M. Wilson, Wm. Humphries, James Rawlence, Ed. Squarry, &c., &c.

From Mr. Mills' house the party proceeded to inspect the rams and ram-lambs of the Southdown breed. It may well be supposed that from his immense flock Mr. Mills is readily enabled to select some most perfect animals, and acting upon the high and honest principle that he will only reserve his best animals as rams, he was enabled to show his visitors about 100 lambs and sheep of a quality which elicited marked admiration from all, whether breeders of Southdowns, Hampshire downs, Leicesters, or Cotswolds.

The company next proceeded to view the arable farming, extending in an unbroken area over 4,000 acres—Wheat fields with their level and now golden surface of 120 to 130 acres, bending with unusually heavy crops—Barley-fields of a growth wonderfully even, bountiful, and uniform, and extending in one piece to nearly 200 acres—Turnips, in their long, straight, and regular lines, which however they might rejoice in the genial rain which has been so long expected, yet through the liberal supply of artificial manure vouchsafed them by Mr. Mills look vigorous and strong. Clover, sainfoin, indeed every crop, bore testimony to the wonderful adaptation, whether on the largest scale or in the minutest detail, of the practical and scientific knowledge of him who overlooks and governs the enormous area comprising the Elston, Orcheston, and Tilshead farms.

The party, *en route*, saw the wether lambs (about 700), bred on one portion of the farm, which bore strong evidence of the quality, evenness, and general excellence of Mr. Mills' flock. They were also favoured with a sight of the draught ewes, whose beauty and perfect adaptation to the requirements of the county in which they are kept were fully appreciated. Several flocks equal to the stock of most ordinary farms were unvisited, from the long period occupied in seeing what we have vaguely mentioned, and when, in passing, the company casually inspected the substantial and elegant mansion which Mr. Mills is now erecting on the Elston estate, they universally expressed a wish and hope that he might long live to enjoy it.

On the return of the visitors to Mr. Mills's residence, a cold collation, comprising everything which hospitality could furnish, attracted their full attention. The charming ride over the breezy downs afforded an excellent excuse for the full justice which this entertainment received.

After dinner, a few speeches on the practical agricultural questions of the day, from some gentlemen whose opinions were deserving of deep attention, were delivered. The toast of the day, however, was that of the worthy host, whose courtesy and lucid explanation of his agricultural management gave occasion to his guests to observe that they had passed, through his hospitable invitation, one of the most delightful and instructive days of the Royal Agricultural Society's visit to Salisbury.

We will only add, in conclusion, that Mr. Mills's efforts to entertain and instruct his visitors were ably seconded by his son. It was through the judicious arrangement of his own and Mr. Mills's stud, that so large a party was comfortably deposited on the broad acres of this fine estate.

LEWES WOOL FAIR.—The wool fair was held last July 20, at the Star Hotel, where an excellent dinner was provided by Mr. Kemp for an unusually numerous party, about 130 being present, under the presidency of John Ellman, Esq. After the usual toasts, the Chairman said: "The nobleman who held the office at Chichester which I do here, contented himself with giving two toasts before going to business. I can quite see why he did that: but being in the county of Sussex, I must give you a third, and it is, 'The health of the Duke of Richmond'" (loud cheers). The Chairman said, that really any observations from him as to the market being brisk or lively would be entirely thrown away. After explaining that he had been misled by a report in a Wiltshire paper—an extract from which he had sent to the Duke of Richmond—as to the prices at Andover Wool Fair, 45s. per tod of 28lbs. being obtained, instead of 55s., he proceeded to say, that at Devizes he was informed by a friend there was a larger quantity of wool packed than on any previous occasion, 30,000 fleeces being picked. The quality was very fair South Down, and at two o'clock a large proportion of it was sold, at prices not exceeded this season, and there was every probability of the whole changing hands, as there was only 6d. per tod difference between buyer and seller. One prime lot reached 36s. per tod of 28lbs., and several other lots the same sum. South Down tegs were at 45s. to 46s., which was from 19½d. to 20d.; and mixed lots at 42s. 6d. At Whitford fair, he was told by Mr. Bligh, of Norfolk, that Lord Leicester and Lord Walsingham sold at 48s. Mr. Hammond refused 46s. 46s. was offered for other lots. He (the chairman) refused 45s. There was a good business done, and the farmers sold largely. He had seen in their own country paper—and the buyers would corroborate him if he were correct—an article headed "Rise in Wool," from which it appeared that the colonial wool sales last week had been well attended, had caused much animation, and had shown an advance of 1½d. per lb. He was delighted to see so many wool-buyers here, prepared, no doubt, to give good prices, and though he would not venture to advise, he would say it was an axiom of his late father's, that the best time to sell was when persons were willing to buy. He gave them "Mr. Thomas Legg and the Wool-buyers" (cheers). Mr. Legg responded, after which the following sales were effected:—Mr. G. Blaker offered Mr. T. Legg 919 ewe and 345 teg fleeces at 1s. 9d.. Mr. Legg would give 1s. 8½d.—Accepted. Mr. Hudson's wool sold at 1s. 9d. to Mr. Powell. Mr. Powell—I will take Mr. Ellman's at the same price. Mr. R. E. Ellman—I have just sold at 1s. 9d. to Mr. Wallis. Mr. Hale offered the Earl of Sheffield's wool—193 ewes, 6 rams, 48 wethers, 224 tegs, to Mr. Isard, at 1s. 9d.—Accepted. Mr. J. Verrall offered to Mr. Smith 1,100 ewes and 400 tegs at 1s. 9d., which Mr. Smith eventually accepted. Mr. Pennington offered 583 ewes and 203 tegs to Mr. Breach at 1s. 9d. 1s. 8½d. offered and declined. Mr. Homersham bought it at 1s. 9d. Mr. Tompsett (Deans) offered to Mr. C. Legg 1,600 fleeces, one-fourth tegs, at 1s. 8d.—Declined, but offered to take it at 1s. 7d., which was ultimately acceded to. Mr. Botting offered to Mr. Adams 530 Down ewes, 425 tegs and 20 cross-breeds at 1s. 9d. Mr. Adams would give 1s. 8½d. —Accepted. Mr. C. Saxby offered to Mr. Moore 1,350 ewes and 600 tegs at 1s. 8½d. Mr. Moore would give 20d.—Accepted. Mr. Hudson (Blatchington) sold to Mr. Moore 600 ewes and 200 tegs at 1s. 7½d. Mr. J. Saxby offered his wool (700 ewes and 300 tegs) to Mr. T. Legg at 1s. 9d., but accepted at 1s. 8½d. Mr. J. Jenner sold his wool to Mr. Lucas at 1s. 7¾d. Mr. Cane sold to Mr. Breach 1,100 ewes and 400 tegs at 1s. 9d. Mr. E. Cane thought the fair should remain as it was. He had sold too low last year to Mr. Breach, and he now offered him 1,100 ewes and 400 tegs at 1s. 9d. Mr. Breach admitting he had had rather the advantage last year, accepted the offer. The meeting shortly after broke up.

CALENDAR OF AGRICULTURE.

This month is the general harvest over the greater part of South Britain, and except in high situations and in northern latitudes, grain crops will be cut and carried. Wheat is best cut by hand-sickle, and tied in sheaves; barley and oats are mown, and may lie for some days in the swathes before being tied in sheaves; when dry, carry the grains quickly. Turn over the heaps of peas frequently, to prevent mouldiness on the under side; stack them with little superincumbent pressure; have plenty of thatch always ready.

Cut all grain crops before dead ripeness happens; the straw makes better fodder, the sample of grain is better, and the meal is finer; the husks being thoroughly filled, the grain will soon become hardened.

Finish the cleaning of all green crops, and earth-up potatoes with two furrows of the double mould-board plough, drawn by two horses, walking in distant furrows, with a main trace of five feet stretching between them. A week may elapse between the two furrows of earthing up; pull by hand any tall weeds that may afterwards arise.

Lay pulverized lime on clay fallows; harrow and plough it into the land lightly, or lay the cinders on the land, and cover by ploughing; the moisture in the land will burst and reduce into powder, which will be mixed with the soil by subsequent ploughings and harrowings; this mode of applying lime requires to be done in last month. Lay farm-yard dung on wheat fallows, spread and cover by ploughing without delay, or drill the land with one furrow of the common plough; spread the dung in the hollows; reverse the drills, which will completely cover the dung; a cross-harrowing will level the drills for the seed furrows. On wet clay lands, the cuts and gaws must be opened, to convey water quickly from the land.

Supply to horses and cattle in the feeding yards ample stores of vetches, which will now be rich food from the pods being seeded. Provide litter in abundance; the manure produced will repay all cost.

Fold sheep on bare spots of pasture grounds; go on with draining; turn over any earthy composts; burn peaty and vegetable substances for ashes as a manure to be used in drill; fill the liquid tank with earthy substances to be saturated; carry to the pit refuse matters of every kind.

Keep the draft ewes on good pasture, in order to get them fattened; put ewes to the ram for early lambs. The lambs of last spring must have good keep; draft ewes and lambs of the year are often sold at this season.

Sow on beds of rich and well-prepared lands the seeds of drum-head cabbages, kohl rabi, savoys, and broccoli, for plants to be used in next May. Sow about the end of the month rye and tares for early spring use.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR JULY.

Under the influence of a very high temperature, and an almost cloudless atmosphere, the crops generally in all parts of England have ripened with great rapidity; so rapidly, indeed, that not a few of our farmers have been taken by surprise at the immense amount of labour suddenly required to be performed. The cutting of wheat was commenced in Essex as early as the 17th, and on the 20th new Talavera was offered for sale in Mark Lane in fair condition. Some patches of barley, oats, and peas were cut about the same time, and since then the sickle has been in active and uninterrupted progress. We never recollect a season during which the crops, taken as a whole, have presented a finer appearance, and it is scarcely possible to call to mind a period in which there have been so few drawbacks as the present. The diseases frequently so much complained of have formed no topic for discussion; and we may safely state that the yield of wheat, up to this time, is a full average one, and in fine condition. Barley, in order to swell the produce, and to ensure a bulky crop, has required more moisture than it has received, and the same may be said of oats, beans, and peas, neither of which crops can be considered large. Although a large quantity of wheat and other produce has been cut during the last ten days, the supply carried, up to this time, is trifling; and, considering that much has yet to be done in the fields, it would be premature on our parts to hazard a decided opinion as regards the weight and condition of the total yield. At present, however, there is nothing to complain of, and appearances are in favour of the grower. The quantity of land under wheat culture is generally supposed to be considerably in excess of last season. If this statement be correct, we may look forward to a considerable excess in the entire growth, and a further decrease in the value of most kinds. On this subject—viz: future quotations—a great difference of opinion prevails. It is admitted by well-informed parties that we are likely to import very large supplies of produce from the Upper and Lower Baltic; but others contend that, as America has nothing to spare for us from last year's crop, there is no prospect of a decline in present rates. The stocks of wheat, flour, and Indian corn, at Liverpool, are now small, and great inroads are being made upon them almost daily: hence there has been some firmness in the demand for produce there compared with Mark Lane, and a speculative feeling has sprung up, in more than one quarter, that wheat has seen its lowest point. There may be some steadiness in price during the month of August and a portion of September, owing to the absence of American supplies, and to the farmers' time being almost wholly occupied in the fields. But the harvest in the United States is represented as a most abundant one, and no doubt great exertions will be made to forward produce to this country during the months of September, October, and November, including perhaps December, especially as freights are low, and tonnage is very abundant. The supply of old English wheat now on hand is by no means so small as has been represented; still, it cannot be denied but that the stock is becoming exhausted, though not to the same extent as we have noticed at some corresponding periods. As regards old barley, oats, and peas, we may safely state that the supplies are unusually small. We learn, however, that rather large quantities of beans remain in stack.

This year's crop of hay has been pretty well secured. Compared with last season—which was, perhaps, the most abundant one on record—the crop is not large, though we consider it a fair average one. Fine new meadow hay has sold in the London markets at £4 4s., and new clover £4 10s. to £4 15s. per load. These prices indicate a good supply; but we may state that an immense quantity of old hay is still in stack.

The weather has been singularly favourable for the growth of potatoes, which, with very few exceptions, are wholly free from disease. The tubers have rapidly become bulky and of fine quality; indeed, we have known them much less weighty in the middle of August than they now are. We are informed, however, that along the coasts of Ireland —the inland crop being still healthy—the produce is likely to be a most inferior one. From Scotland, on the other hand, we learn that there are no reasonable grounds for complaint.

Notwithstanding that the imports of wool into England this year have been in excess of last season, and that upwards of 70,000 bales are now being offered at public sale, the wool trade has been very active, and an advance of 1d. to 1½d. per lb. has taken place in the quotations. The future prospects of the trade are decidedly favourable, especially as the stocks on the Continent are very small.

There has been an improved feeling in the hop trade, and prices have had an upward tendency. Apparently, the growth of hops this year will be much smaller than in 1856, as the duty has been down as low as £100,000.

With the exception of the complaints in reference to the potato disease, alluded to above, our advices from Ireland and Scotland are favourable. The crops promise well, and there is still a fair quantity of wheat in the hands of the farmers. The shipments of that grain from Scotland have been larger than usual.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

The state of the trade generally, the rapid increase in the supplies, and the extraordinary fluctuations in prices during the month under review, must, if we mistake not, tend to dispel the error into which not a few contemporary prints have fallen, to the effect that the production of live stock in the United Kingdom has not kept pace with the increase in the population. We are not about to argue upon the assumption that the growth of food is equal to the wonderful development of the manufacting industry of the country, in other words that it can meet a sudden demand (above ordinary wants) without leading to a greatly increased value; but with favourable seasons, such as those we have experienced since 1855, and with most remunerative prices, it would be absurd to suppose that our breeders would be slow to take advantage of dear markets, consequently that they would decline to increase the numerical strength of their supplies; and we have no hesitation whatever in saying that combined with the importations from abroad, our markets will be fairly supplied during the remainder of the year. Still, all who have watched the progress of our trade, and who fairly consider the great wants of our country, must be perfectly satisfied that we shall continue to have high prices. Everything, in point of fact—though there is no scarcity in any quarter—tends in that direction. And here it is necesssary that we should allude to the enormous consumption of foreign food—chiefly Dutch—which is still going on in France. During the present year, ending on the 30th of June, the importations of live stock into France amounted to 182,000 head, against 173,000 head in the corresponding six months in 1856, and 174,000 in 1855; the exports in the same periods were 34,000, 32,000, and 28,000 head respectively. This movement may well excite great surprise in this country, but the wonder is how such immense supplies are obtained without producing great scarcity elsewhere. Holland we find has contributed about one-third of the supplies indicated, the remainder having been drawn from Spain, and a few thousand head of sheep have been imported into Marseilles from Algeria. The producing powers of Spain and Holland are likely to be taxed to the utmost for a considerable period; and whilst France continues a powerful competitor for stock, and whilst, consequently, large supplies are diverted into other channels, which otherwise would have been forwarded to this country, we cannot anticipate any large foreign aid or a great decline in the quotations.

The excitement on the subject of the cattle disease in some parts of the Continent, and to which special attention has been directed from time to time, appears to have subsided. Fortunately, the disease does not appear to have increased, and the latest accounts are reassuring. Evidently, however, some severe losses have been sustained by the Prussian graziers. Of late scarcely any diseased foreign stock has been imported into this country, arising, no doubt, from the severe, but necessary, precautions on the part of our authorities, to whom much credit is due for the vigilance they have exercised in inspection.

In our leading grazing districts the health of the stock continues good: there has been a good hay crop, but a very moderate amount of pasture food. This latter circumstance is much to be regretted, because the graziers' expenses increase rapidly upon them during the period of a deficient supply of grass, and the inroads made upon the stock of new hay are productive of great inconvenience during the winter months. Apparently, the whole country stands much in need of moisture; even the quantity of grain would be considerably increased by copious showers, if not of too long continuance.

The Norfolk season for beasts is now just concluding; still we learn that numbers left in that county are larger than usual. The London market has been extensively supplied from that county for the time of year, in full average condition; and, on the whole, we are of opinion that the past six months have proved highly profitable to the graziers, and more especially to the breeders. It is too early to form an opinion of the numerical strength or the condition of the stock to be derived from Lincolnshire and the adjacent counties from this time till the close of the year. As yet, however, the beasts have come forward in but middling condition; and our information generally is to the effect that future supplies will not be over-abundant, although no scarcity is hinted at. Unless we have large supplies of rain during the coming month, it is more than probable that the turnip crop will be a very poor one this season.

The following figures show the extent of the imports of foreign stock into London during the past month:—

Beasts	2,787	head.
Sheep	16,001	„
Lambs	3,216	„
Calves	2,877	„
Pigs	2,077	„
Total	26,958	„

SUPPLIES AT CORRESPONDING SEASONS.

In July, 1857, we received 3,151 beasts, 16,910 sheep, 3,415 lambs, 3,858 calves, and 2,603 pigs, or a total supply amounting to 30,537 head. In 1855, the arrival was 22,680; in 1854, 22,242; in 1853, 38,795; in 1852, 27,008; and in 1851, 24,082 head. Thus it will be seen that, of late, we have drawn fair supplies from the Continent.

In the Metropolitan Market the total supplies of stock shown have been:—

Beasts	19,558	head.
Cows	530	„
Sheep and lambs	142,280	„
Calves	3,830	„
Pigs	2,395	„

These are fair receipts, as will be seen by the annexed:

COMPARISON OF SUPPLIES.

	July, 1856.	July, 1855.	July, 1854.
Beasts	18,589	16,702	19,740
Cows	500	535	540
Sheeps and lambs	135,650	149,470	157,970
Calves	3,407	2,757	4,123
Pigs	3,225	4,000	3,110

About 7,000 beasts have been derived from Norfolk, Suffolk, Essex, and Cambridgeshire, against about half or less than half that number in 1856. Lincolnshire and Leicestershire have furnished about 3,000 shorthorns, other parts of England 2,250 of various breeds. The receipts from Scotland have been only 71 Scots; from Ireland 11 oxen.

During the first fortnight of the month the trade generally in the Metropolitan Cattle Market, owing to the pressure of supply and the intense heat of the weather, was heavy in the extreme, and prices gave way to some extent. The demand has since improved, and the quotations have ruled somewhat firmer.

Newgate and Leadenhall have been seasonably well supplied with meat, and the trade has ruled somewhat heavy. Prices have fluctuated much to the same extent as in the cattle market.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BEDALE FORTNIGHT FAIR.—We had a fair supply of all descriptions of beasts and sheep, which had better demand than last market; but rates were unaltered. Beef 7s. to 8s. per stone, mutton 6d. to 7d. per lb.

BEWDLEY FAIR.—There was a good stock of sheep, and an average of cattle. Prices were giving way. Beef did not fetch more than 7d., some being sold for less. The average price of mutton was also 7d., prime scarcely realizing 7½d. Lamb sold for 8d. There was little business transacted, sellers not liking the reduction, and buyers being disinclined to give more.

BOGBAIN MONTHLY MARKET.—There was a good show of stock of all kinds—better than there has been for several months. The demand for cattle was very brisk, and good prices were readily given. For Highland cattle the prices were those of last market: for good crosses they were slightly higher. There was scarcely any difference between the prices and those given on the previous day at the Muir of Ord. Milch cows were in good demand; but the show was not large. The sales were mostly in small lots. Of sheep there was a considerable show; but the transactions were not numerous. There were some fine lots. The prices were slightly below the level fixed by the wool-market sales of the previous week. A good many horses were shown; but few sales took place.

BROMYARD FAIR.—There were but few steers, cows and calves, and barrens on offer, and little business was done; rates rather lower. Lambs fetched 8d. per lb., and sheep 7d. Pigs were much reduced in price. In the horse fair there was nothing doing.

CAMELFORD FAIR.—There was a very good supply, upwards of 3,500 sheep being penned, 3,000 of which were sold, the lambs varying in price from 15s. to 27s. each. The bullock fair, on the 18th, was also well supplied with cattle of all sorts; and although business appeared to be very dull for a long time in the morning, it was found, at the close of the fair, that more than 350 head had exchanged hands, at prices about the same as at late fairs in the neighbourhood.

CAWDOR MONTHLY TRYST.—The number of cattle on the ground was scarcely up to the average of the former trysts held there this season. There was fully the usual proportion of fine-conditioned, heavy animals present; but by far the greater portion of the market was made up of one and two-year-olds, all in thriving condition. The difference between the lighter and heavier kinds of stock exhibited, either in size or condition, was not so wide and marked as usual. A good many sales were effected, slightly below former rates; but many of the best lots, towards evening, left the market unsold. The following are a few of the sales which took place during the day: Mr. Anderson, Gollanfield, sold 14 two-year-old crosses at £15 5s.; Mr. Cruickshank, Milton, Petty, a lot of three-year-old polled stots at £17 5s., and a pair of small queys at £11; Mr. Macpherson, Torrich, a lot of two-year-old polled stots at £12 (the finest of the kind, at their age, in the market); Mr. Morrison, Alnahall, a lot of two-year-old crosses at £9; Mr. C. Forsyth, Clune, a lot of two-year old polled stots at £11; Mr. Kennedy, Lievarattach, a lot of two-year-old cross queys at £10; Mr. Anderson, Glackton, a lot of year-old cross queys at £8, ditto two-year-old cross stots at £15; Mr. W. Gordon, Lethenbar, a mixed lot of two-year-old ditto at £10; Mr. W. Grant, Flenas, a lot of two-year-old polled queys at £9 10s.; Mr. Clark Milton, of Kilravock, a lot of year-old crosses at £8; Mr. C. Clunas, Auldearn, a lot of two-year old ditto at £8, and another lot of ditto at £9 12s. 6d.; Mr. C. Smith, Raitloan, a lot of ditto at £11; Mr. Macarthur, Rait, a lot of two-year-old mixed at £8; Mr. Macpherson, Knockanbowie, a year-old cross quey at £10, and a lot of small year-old crosses at £3 10s. Mr. C. Forsyth, Newton, Darnaway, bought a lot of one-year-old crosses at £5 5s. Mr. Henry, Achneim, sold one of the few cows on the stance at £18; and the only lot of sheep present —blackfaced ewes and lambs—were disposed of at 13s. per head. A few horses were also shown. A year-old colt was sold by D. Macpherson, Culloden, at £9 10s.

GLOUCESTER MONTHLY MARKET.—There was but an indifferent supply of fat stock. Beef was very scarce, not half equal to the demand. There were very few fat sheep penned, which were soon disposed of. Lambs were also scarce, and in indifferent condition. Nearly the whole of the stock was disposed of, at the following prices: Beef, 7d. to 7¼d.; mutton, 7d. to 7¼d.; lambs, 8d. to 8½d. per lb.

HORSHAM FAIR was well attended and abundantly supplied with stock of all kinds. There were between 11,000 and 12,000 sheep and lambs. There were horses in good number, but not many of first-class quality. Trade was unusually dull, and scarcely any business was transacted until the latter part of the afternoon, and a great many sheep, lambs and horses did not change hands at all. It was a sluggish day throughout.

KNIGHTON FAIR.—Lambs were in great demand, and realized high prices. There was a good supply of both sheep and cattle, and the price of the latter was high.

LINCOLN FAT STOCK MARKET.—There was a good show of both beasts and sheep, and notwithstanding that there was only a slack demand, holders remained firm to the close of the market. Beef realized fully 8s. per stone, and mutton 7d. per lb.

MORETONHAMPSTEAD FAIR was not very largely supplied, neither was there a large attendance of buyers. A few fat bullocks were disposed of at from 10s. 6d. to 11s per score; cows and calves, though not eagerly sought after, found purchasers at prices varying from 14*l.* to 17*l.* the cow and calf; good fresh steers sold well at from 20*l.* to 25*l.* the pair; barreners changed hands at from 7s. to 8s. per score. Of sheep there were 465 penned, out of which number 380 were sold, and among these there were some fat sheep, which were disposed of at about 6½d. per lb.; fat lambs sold well at from 18s. to 24s. each; keeping sheep at from 30s. to 36s. each.

NEWARK FORTNIGHTLY MARKET.—The supply of sheep was small, but there was a good show of beasts. Beef realized fully 8s. to 8s. 6d. per stone; mutton 6½d. to 7d. per lb.

NEWCASTLE EMLYN FAIR was held on the 20th inst. Cattle were low to what they have been, and of a slow sale. Horses and colts were a little more lively, but not at all brisk.

READING FAIR was tolerably well supplied with cow cattle. The business has ruled rather dull, and prices were lower. Milch cows sold at £14 to £17, barreners £10 to £16, and in-calf heifers £12 to £18. For horses the fair was very dull, and all sorts were cheaper than last May.

ROSS FAIR.—The supply of store and fat stock was not so good as is usual. Beef made about 7d. per lb.; mutton 7d.; lamb, 7d. to 8d. Lamb sold briskly. Store cattle and sheep were a dull sale, and the sellers not being willing to comply with the offers of the buyers, many were driven away unsold. The horse fair was also thinly supplied, and trade was dull in this department.

ST. BOSWELL'S ANNUAL MARKET, the most important in the south of Scotland, was composed of bred, three-part and half-bred lambs, and three-part, half-bred, and Cheviot hoggs. The stock, with few exceptions, were in fully better condition than they were last year. The buyers were numerous from all parts of the country. The advance on the prices from last year was from 6d. to 1s. 6d. per head, according to condition. At the close a good number of lots remained unsold. Bred lambs: A lot of wethers from Nisbet Mill, going to Houndrigg, brought 26s.; and another lot of ewes and wethers, from Sunnilaws, fetched 20s. There were a few other lots disposed of at similar prices. Three-parts (ewe and wether lambs): A lot from Cappuck, going to Earnslaw, 23s. 6d.; Lord Lauderdale's lot was sold, going to Mountfair, at 22s.; a lot from Oznamneuck, at 21s. 9d. Mr. Ritchie, salesman, Edinburgh, bought at 21s.; Mr. Scott, Frogden, got 18s. 6d.; Mr. Hogg, Glendarg, 22s. 6d.; and the Cleckmae lot, 21s. 3d. Half-bred: The Marchclugh lot (wether) brought 18s.; Mr. Bryden, Netherbarns (wether), 22s. 6d.; and a few other lots were disposed of at similar quotations. Mr. D. Anderson, salesman, bought the following lots: Seven score at 18s. 6d.; five score at 17s. 3d.; ten score at 16s. 6d.; four score at 15s.; and four score at 19s. The hogg market was largely supplied, there being, in fact, more stock than was ever seen here at this market before. Three-part, half-bred, and Cheviot sheep in condition, brought last year's prices; but the inferior kinds 1s. to 1s. 6d. per head under that of last year. The show of shorthorned cattle was very extensive. The following are a few of the sales: Messrs. Swan and Sons sold 32 two-year-old shorthorns to Mr. Hubback at £12 15s. Mr. Bishop, salesman, Edinburgh, bought a lot of two-year-old shorthorns at £14. Mr. David Anderson, salesman, bought 20 two-year-old shorthorns at £17, and 20 at £13 15s. Mr. Ritchie, salesman, bought a lot of two-year-old shorthorns at £16 10s., allowed to be the best value in the market, and another lot at £14s. 5s. There was a tolerably fair show of milk cows. For real good milkers there appeared to be a demand, for the better class of which about £15 was obtained; secondary qualities about £12, and inferior kinds from £8 to £10. There was an unprecedentedly large show of all descriptions of horses. First-class draught horses ran from £40 to £55; secondary kinds, £25 to £35; and good useful animals ran from £15 to £20. The better class of saddle and harness horses, £40 to £50; secondary qualities from £30 to £35; and useful animals for jobbing purposes from £25 to £30.

SANQUHAR FAIR.—It was far in the afternoon before any transactions took place; but at the close of the market a fair average amount of business was effected, at an advance on last year's prices of from 5d. to 1s. on Cheviot and black-faced lambs. Half-breds were sold at from 18s. to 23s.—rise of 2s. to 3s. on last year's prices. Cheviot lambs sold at 10s. to 13s., the latter being the top price. A lot was sold at 10s., and which only brought 8s. 3d. last market. A very excellent lot sold at 10s. 6d. last year, price 11s. The rise of 1s. 9d. was exceptional, 6d. to 1s. the rule. Black-faced lambs brought 9*l.* to 10*l.* Two very fair lots sold at 9*l.* 15s.—the same were sold at 9*l.* last July fair. A lot of ewe lambs are reported to be sold at 13*l.* A lot were sold at 10*l.*—last year 9*l.* was the price.

SHERBORNE FAIR was not so largely attended by dealers as was expected. The show of stock was limited also, and the trade ruled heavily for all descriptions throughout the day. Down ewes, 32s. to 35s. per head; Down lambs, 18s. to 24s. per head.; Down wethers, 27s. 6d. to 32s. per head; horn wethers, 33s. to 36s. per head; horn lambs, 16s. to 20s. per head; mutton, 6½d. per lb. There were but few Devon steers or oxen; Devon oxen, 16*l.* 10s. to 17*l.* 10s. each; steers, 13*l.* to 15*l.* each; cows and calves, 12*l.* to 15*l.* each; barren heifers, 7*l.* 10s. to 13*l.* each; Irish heifers, two years' old, 6*l.* 10s. each; yearlings, 3*l.* 5s. to 5*l.* each; beef, from 9s. to 10s. 6d. per score. There was a good supply of pigs, which met a dull sale at a reduction in price. There were but a few good horses. The best cart horses sold at from 35*l.* to 40*l.* each; the sales were few. There was a good demand. for wool. The following prices were obtained:—For fleece wool, 1s. 6d. per lb.; tegs, 18½d. per lb.

SHREWSBURY FORTNIGHTLY MARKET. — The best fat heifers (nice small weights) made from 6¾d. to 7d. per lb.; second quality, 6½d. Fat calves, 6d. per lb. Useful store cattle and good cows and calves selling at fair prices. Nice weighted fat wethers, from 7d. to 7½d. per lb.; heavier weights, 7d. per lb. Fat lambs, from 18s. to 25s. each. Store sheep in demand at good prices. Pigs of all descriptions making better prices than in our last market.

STRATFORD-ON-AVON FAIR was well attended with buyers. There was a very good show of stock and sheep with lambs. Owing to the high prices asked, trade ruled dull. Lower prices were ultimately accepted to effect sales, but much of the stock was taken back unsold, Beef and mutton were nearly 1d. per lb. lower than at recent fairs. Lamb, however, kept its price. Cows and calves, stores and milch cows, were cheaper. There were about 350 head of cattle and 1,000 sheep.

WEDMORE FAIR.—There was a paucity of stock of every description and prices sensibly declined. Beef of the cow character ranged from 9s. to 9s. 6d. The best quality from 10s. to 10s. 6d., the top figure, per score. Wether mutton from 6d. to 6½d.; ewe, 5d. to 5½d. per lb.

YORK FORTNIGHT MARKET.—Calving and dairy cows, and also grazing stock, were in fair supply and demand at about previous rates. Fat beasts sold at 7s. to 7s. 6d. per stone. Mutton sheep had heavy demand, at 6d. to 7d. per st. Grazing sheep had moderate sale.

FAIRS IN CARMARTHENSHIRE.—Cattle fairs have been held at Haverfordwest on the 18th, and at Newcastle Emlyn on the 20th of this month. The show of store cattle was under the usual average at those places, but the attendance of dealers was pretty numerous, and many sold at about late prices. A fair number of fat cows, and cows with calves, were on offer, and sold at highly remunerating rates. Sheep and lambs were in large supply and in brisk demand, at very high prices. A large number of horses and colts were for sale; those sold were at about late rates. Pigs of all descriptions continued in large supply, with a fair demand, at reduced prices.

GLOUCESTER CHEESE FAIR was plentifully supplied, from 120 to 150 tons of cheese in excellent condition being pitched. Trade was brisk, and a clearance was effected at the following prices: Best singles, from 59s. to 61s.; seconds, 53s. to 56s.; and skim, 34s. to 40s. per cwt.

GLASGOW, (Wednesday last.)—There were 6 carts of Cheese, which sold at 49s. to 52s. 6d. for new, and 69s. to 72s. for old. In the weigh-house there was a good supply of new Cheese, about 7 tons of which passed through the scales; prices as above. Skim Cheese, 26s. to 28s. per cwt.

BELFAST, (Friday last.)—Butter: Shipping price, 92s. to 100s. per cwt.; firkins and crocks, 10¼d. per lb.; Bacon, 63s. to 68s.; Hams, prime, 84s. to 90s., second quality, 70s. to 76s. per cwt.; prime mess Pork, 100s. to 102s. 6d. per brl.; Pork. 50s. to 58s.; Beef, 100s. to 120s. per tierce; Irish Lard, in bladders, 76s. to 80s.; kegs or firkins, 68s. to 70s. per cwt.

LONDONDERRY, (Thursday last.)—Butter: this week, although we had a large supply of butts and firkins at market, prices still continue to advance, which may be attributed to the great demand there is for the Scotch market:—firkins, per lb., first 10¾d. to 11d., seconds 10¼d. to 10½d., third 9½d. to 9¾d., fourth 8½d. to 8¾d.; butts, fine 10¾d. to 11½d., good 10d. to 10½d., middling 8½d. to 9¾d.

COUNTRY POTATO MARKETS.—York, July 18: New Potatoes, 4d. to 5d. per quartern, and 1s. 6d. per bushel. —Leeds, July 21: A good show of new Potatoes, which sold at 1s. 4d. to 1s. 6d. per 21lbs. wholesale, and 1d. per lb. retail. —Richmond, July 11: Old Potatoes 5s. 4d. per bushel, new ditto 1s. 8d. per peck.—Manchester, July 23: New Potatoes sell at 7s. to 10s. per 252lbs.

KNIGHTON WOOL FAIR.—The ruling price of wool at our fair this week was 1s. 4½d. to 1s. 5d. per lb.

JEDBURGH WOOL FAIR.—There was the usual attendance of manufactures of the district, and from the south. The clips offered for sale were principally those of the softer Cheviot wools of the Border district; the combing or bright haired wools having been mostly disposed of at St. Boswell's. On this occasion the demand was fully sustained from the latter market, and a great quantity of wool was sold at an advance of from 5s. to 7s. upon last year's prices, bringing up the price of wool to a point which it has not attained since 1836. It is difficult to account for this extraordinary rise, but the generally healthy state of trade, combined with the known reduced stock of wool throughout the kingdom and the appearance of an abundant harvest, may help to explain the cause. Mr. Scott, Letham, sold his clip to Mr. M'Kie, Hawick, at 36s. Edmonton Rig fetched 36s.; Westsheels, 36s. 6d.; Earlside, 37s.; Bygatehal, 36s.; Plendesleigh, 38s.; Mainside, 37s.; Boothope, 37s.; Bush, 37s; Calroust, 37s.; Wooplaw, 36s.; Swinnie, 37s.; Hyndhope, 37s.; Hundalee, 37s. 9d., containing an extra quantity of hoggs. Some blackfaced parcels brought 21s. 6d., in good condition; last year's prices for the same being 16s. and 17s.

ROSS WOOL FAIR.—Scarcely any wool was pitched for sale in the places that used to be covered with it. Many, perhaps most, of the farmers had already sold to agents who visited them at their own homes. What was sold fetched the high price of from 17d. to 18d. per lb.

ST. BOSWELL'S WOOL MARKET.—There were few bred or half-bred clips remained unsold at the close of the market, and the prices obtained were very similar to those got at Kelso. Cheviot wools met with a slow demand at 33s. to 35s,; blackfaced—whites, 20s. to 21s.; crosses, 29s. to 31s.

SANQUHAR WOOL MARKET.—The demand was active, and many sales were made at an early hour. At the close of the market we doubt if ever there was the same amount of business transacted in this department at any former sales. The advance upon last year was 4s. to 5s. Hogg wool sold at 36s. per stone of 24lbs. Cheviot ewe and hogg, white and washed, sold at from 31s. 6d. to 33s.; a small lot sold at 34s. A number of very good clips sold at 32s. 6d. nett cash, and which may be said to be the ruling price in the market with this class of wool. Blackfaced white sold at 19s. to 19s. 6d. The greater number of sales were made at the former figure, and which brought last year from 14s. to 14s. 3d. It was expected 20s. would have been reached, but there are no sales reported at that price; upon the whole, the stock farmers have good cause to be satisfied with the result of the market of 1857.

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

After a very fluctuating and doubtful spring, with some suffering from drought, such an amelioration eventually took place in the weather that the present month has fairly brought us into harvest, whereas this time last year the calculation was, that not before the middle of August would it be general. Various opinions have been broached as to present expectations. Blighted ears and mildewed stalks have not failed to make their appearance in sufficient quantity to suggest a deficiency; and, on the other hand, the usual sanguine views have been entertained that a great crop is on the ground. One thing seems certain, that the tillering of the plant was somewhat deficient from the inadequacy of a timely fall of rain; the same cause operating to lessen the quantity of straw. But, the general axiom being granted that "sun makes corn," of which there has been great plenty; that the fields also have looked remarkably level, and that the ears, though not very numerous, are many of them long and well filled; and that many practical men give favourable reports, leads to the opinion that a full average has to be gathered; but the weather on the night of the 27th being much broken with thunder showers reminds us of our critical position. Foreign countries in the South have many of them made a successful and satisfactory gathering: that great consuming country, France, being by universal report very much better off than last year Languedoc and the South changing great deficiency for abundance, and the whole country hitherto promising a good yield. Yet it must be remembered that even there there must be an immediate and large inroad made upon the new produce—foreign stocks, notwithstanding the immense arrivals at Marseilles, being well nigh consumed. Egypt, Algeria, and Italy are undoubtedly well off. Spain seems likely to supply her own wants. The Danubian Principalities and Southern Russia are well reported; and Northern Europe, though unpromising as respects spring corn (and especially so in rye, which shows deficiency) is likely to have a better crop of wheat than last year. In America this season is a late one, and therefore more critical, especially in the North; but reports thence are mostly favourable, though prices being at present much higher than our own place, keeps this source of supply quite in the background. The prospect of an earlier harvest in this country, being equivalent to an unexpected provision of 500,000 qrs. on small and reducing stocks, has produced its natural effects, and July in this respect contrasts with June. In the earlier month we reported a gain in value of 4s. to 5s. per qr.; in the present month the London decline has been fully 8s. per qr.; but the closing market indicated more firmness, it being well-known that millers have kept their stocks at the lowest point, while through the entire month the price of town-made flour has remained at 54s. per qr. for the best quality. In the present unsettled state of prices, quotations, either in this country or abroad, are but of small account; but in France, where the greatest changes have occurred, we may make a comparison with our own, especially as it is known that the mercantile interest there are straining every nerve with the Government to obtain a free export; so it becomes a possibility that French wheat may again appear in our markets should prices permit. The best Normandy wheat at present at Paris is quoted 56s., to 58s. per qr., the demand being entirely retail. At Antwerp as high as 67s. is still quoted. At Rotterdam, with a moderate decline, the price of the best red wheat was about 68s. 6d. per qr. So these near countries are the most likely to attract France should the export be permitted. In Hambro' the quotations were for red upland wheat were 58s. and the Danzic top price was 62s. 6d. per qr. Berlin quotes 57s.; Copenhagen dried, 60 lbs. per bushel, 50s. per qr. At Odessa the best soft wheat was quoted 48s.: Sandomirka, 50s. 6d. per qr. At Galatz, first quality was held at 42s. per qr.: Ibrail, 43s. per qr. At New York, Chicago spring red wheat was quoted 49s. 6d., and the best white Genessee equal to 72s. per qr., and Southern 70s. As respects the prospect for spring corn in this country, it would appear that there has been too much dry weather, especially for spring-sown beans, oats, and late barley, to cherish the expectation of abundance; but doubtless the first deliveries will be free enough to keep rates at a moderate point, and the high rates lately paid for grinding barley can hardly be expected to continue. In the south of Ireland, on the coast, we have reports that the potatoes are diseased.

The London wheat trade on the first Monday commenced on moderate supplies. There having been a very beneficial fall of rain, with fine sunny weather following, though the morning's supply from the near counties was quite scanty, millers expected to be able to obtain a reduction of 2s. on former prices. To this factors not agreeing, nearly the entire show of samples was left on the stands, the business in foreign being almost nothing. On the following day there was more disposition to buy, there being found no advantage by the delay. This week was so uniformly dull all through the country that scarcely any variations in the different markets could be quoted, the tendency as the week advanced pointing more to a decline; Liverpool, so often differing in its reports from London and other markets, agreeing in the general calm at unaltered rates.

On the second Monday supplies were still more moderate, those for the morning included; but the weather having been remarkably fine and forcing, with a prospect of an early harvest, factors were fully prepared to concede an abatement of 3s. per qr., to make a clearance of their English samples; but millers saw their advantage, and still kept aloof from the market. Some few samples were made at the Kentish stands to necessitous buyers; but generally the previous Monday's course was re-enacted, and factors left with their samples unsold. Foreign to sell must have submitted to a free reduction, but there were few holders inclined to press sales. At the proposed London decline a good deal of business passed this week in the country; Boston, Leeds, Hull, and other places accepting it; but Louth stood out, though Lincoln, Norwich, and Woodbridge submitted to a fall of 4s. to 5s. per qr. Liverpool, like Louth, resisted the downward movement, Tuesday being rather in buyers' favour, and Friday favouring sellers.

On the third Monday, with good arrivals through the previous week, and almost no sales at the English stands, though the morning's addition was small, there was an accumulation, which, pressing on factors, they would have accepted a further abatement of 5s. per qr.; but the fine weather still serving millers as their guide, there was a perfect suspense to trade, so much so that some factors declined making quotations, as they had become entirely nominal. Wednesday, however, brought millers round, and some business was done at the proposed decline of 5s. per qr., and there remained more tone in the market through the week. The country only very partially responded to this, what we may call, "abject state of trade," for the small quantity on offer was insufficient to produce a panic. Leeds, Wakefield, and Newark only made the difference 1s. to 2s. less per qr. Lynn, Birmingham, and Bristol were but 2s. to 3s. lower, and Gloucester 4s.; but Louth, this time, agreed with London, and made the fall 5s. Norwich, however, did not change the rates, and Newcastle recovered 1s. to 2s. on the Tuesday's decline. Liverpool made no further retrograde movement on the Tuesday, and on her last market quoted 2d. per 70lbs. advance.

The fourth and last Monday came, and no further decline was found necessary, though the foreign supplies were larger than in any week previous, millers buying steadily, though not very quickly at the nominal quotations of the previous day's se'nnight. In some instances there was rather more money made, but the general uncertainty of previous rates made the improvement scarcely quotable. Rain falling on the following night plentifully, the probability is that country markets would rather improve than otherwise, there being a great extent of wheat cut and in sheaf; though should it take up, it will be rather beneficial than otherwise. Liverpool, on Tuesday, was firm, as was London on Wednesday, rather pointing upwards. As compared with this time last year, the general foreign supplies have greatly fallen off, but prices were then 13s. 5d. higher than at present, and more uncertainty existed as to the holding out of stocks. The supply in London for the month has been 19,269 qrs. English, and 61,563 qrs. foreign; this is a decline as compared with June of about 9,000 qrs. weekly. The exports for the month were 2,995 qrs. wheat, 456 qrs. barley, 557 qrs. oats and beans, 9 qrs. peas, 61 sacks flour, 60 qrs. malt, and 200 qrs. maize.

In country flour there has been a great reduction in the course of the month, the first Monday commencing for Norfolks at 48s. per sack, and the last closing at 40s.: but in American samples there has been scarcely a greater reduction than 2s. to 3s. per brl. Town-made samples we have noted have not altered, though it is fair to state that in the last month of June Norfolks were 50s., approaching to within 4s. of the best town quality, when millers were not induced to raise them to a relative value. As is usual at this period of the year, supplies since last month have fallen off, the fear of the condition, as well as reduction in the demand, operating with country millers to reduce the quantity sent up; they, however, have been fair, viz., 49,189 sacks country, 5,088 barrels and 6,081 sacks foreign.

Barley has very little changed in value during the month, the plentiful foreign supplies and earliness of the new crop making up for the clearance of the stock of old English. New samples have appeared from Kent, beautifully dry and sweet, but not so kindly as could have been desired. The prices made have been 42s. and 44s. in the last sales; and as old Saale has been making 43s. 6d., and the barley crop though broad is not expected to be heavy, these rates for good qualities do not seem likely to give way much. The best old foreign malting and distilling kinds have receded in value about 1s. to 2s.; and grinding parcels, not sweet, fully 3s. Of these there is a moderate stock in London, but very little elsewhere, and foreign ports were pretty well cleared out. Some new Silesian has been sent as a sample here, but it was very thin and poor, and augurs but little favourably for our new receipts from abroad. The arrivals into London have been during the month only 825 qrs. of home growth, and 32,776 qrs. from abroad.

Malt all through the month has remained unaltered in value, its high price having checked sales, and its small quantity on hand supporting the rates.

The present month as respects the oat trade has been a declining one. The first two Mondays left prices where they were, and the last two successively reducing them 6d. to 1s. per qr., making the reduction on really good sweet corn about 1s. 6d. per qr.; but the bulk of the foreign cargoes having been undried and shipped in hot weather, have generally been in a most miserable condition, and sold at prices proportionately low. Though there has been an abundance of foreign, but few arrivals have come from Ireland. The total supplies for London through the month were 832 qrs. only of English, 903 qrs. Scotch, 9,720 qrs. from Ireland, and 122,226 qrs. from abroad. Some Riga and Archangel shipments having appeared, there is no fear as to the trade being well supplied till the new crop begins to be shipped freely; we have, however, received about 40,000 qrs. less this month than last.

The hay crop, though excellent in quality, has proved light on the whole; and the drought has lasted too long since the cutting to permit many hopes of a secondary gathering in the hay countries, or a good pasturage where fed off.

The arrival of foreign beans this month has been very scanty, but the prices made of English have occasioned a fair supply of native produce, the last crops being decidedly good. Prices through the month have undergone no change; but as Egypt this season will be in condition to make free shipments, we can scarcely expect the present rates to stand. The quantities received have been 2,063 qrs. native, and only 604 qrs. from abroad.

In peas the receipts are reversed, the market through the month having been furnished with only 270 qrs. of home-growth, while foreign arrivals have reached to 3,090 qrs.; but the latter have been white boilers, and their importation, after the dullest season known for this description, shows that the old stocks were worked off for cattle feed by the prices realized for beans and hog peas. No change can be quoted through the month; the new samples of dun, however, have been offering at 4s. less than were lately making for the old, the latter having made 46s. and over. New fine white boilers have this brought 44s. and 45s.; they are small this season, but heavy, and at present dry.

Linseed, too, has been advanced in price, but its being so high has greatly limited consumption, and so prevented the advance which must otherwise have occurred. The places of growth in Russia and Germany all say that the plant suffered in the spring, and so must rule high through the whole season. Cakes have been very saleable, and kept their value.

In seeds several new samples have appeared. The rapeseed is generally good coloured, and in fair condition; it has found but a slow sale hitherto, at £36 per last to seedsmen, the rates being above the attention of crushers. New trefoil is fair, and so is new trifolium from France, both held at about 24s. per cwt. Canaryseed, contrary to expectation, has rather advanced on the high rates. Old samples of Cloverseed have had some speculative inquiry, at rather more money than a little while ago could have been obtained. New winter tares have been offering very small, but pretty sound and dry; the rates demanded have been 6s. to 7s. per bush., but inquiry has not yet commenced, and speculators do not seem inclined to lay in stock. Mustardseed may be shortly expected; the old samples, though not first-rate, have been held at full prices. So has hempseed. In coriander, carraway, and other seeds, but little has been doing, at about former quotations.

CURRENCY PER IMPERIAL MEASURE.

				Shillings per Quarter	
Wheat, Essex and Kent, white	48 to	65	extra	— to	—
Ditto, red	47	60		—	—
Norfolk, Linc. and Yorks., red	48	58		—	—
Barley, malting	40 to	41	Chevalier, new	42	45
Distilling	37	39	Grinding	26	32
Malt, Essex, Norfolk, and Suffolk	67	72		—	77
Kingston, Ware, and town made	69	73		—	78
Brown	62	63		—	—
Rye	—	—		30	36
Oats, English, feed	21	26	Potato	27	32
Scotch, feed	20	26	Potato	28	34
Irish, feed, white	20	26	fine	25	32
Ditto, black	20	24	,,	—	25
Beans, Mazagan	34	39	Ticks	36	39
Harrow	36	40	Pigeon	43	47
Peas, white boilers	40	44	Maple .. 42 45 .. Grey	40	41
Flour, per sack of 280lbs., Town, Households		50s.	fine	53	54
Country	41	43	Households	44	45
Norfolk and Suffolk, ex-ship				39	40

FOREIGN GRAIN.

				Shillings per Quarter	
Wheat, Dantzic, mixed	60	65	high do. — — extra	—	70
Konigsberg	50	70	,, — —	—	—
Rostock	46	70	fine — —	—	—
American, white	60	65	red 57 60	—	—
Pomera., Meckbg., & Uckermrk, red	50	60		—	—
Silesian, red	45	56	white	60	65
Danish and Holstein				45	56
Russian, hard	45	60	French	(none)	
St. Petersburg and Riga				46	60
Rhine and Belgium				—	—

Barley, grinding	26	30	Distilling	35	39
Oats, Dutch, brew, and Polands	20	28	Feed	19	25
Danish and Swedish, feed	20	26	Stralsund	23	26
Russian				23	26
Beans, Friesland and Holstein				37	39
Konigsberg	32	37	Egyptian	37	38
Peas, feeding	36	37	fine boilers	40	42
Indian Corn, white	36	39	yellow	36	39
Flour, per sack ...... French	—	—	Spanish	—	—
American, per barrel, sour	22	27	sweet	30	34

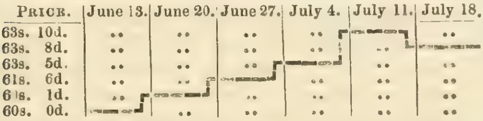
IMPERIAL AVERAGES.

For the last Six Weeks:	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
June 13, 1857	60	0	38	9	26	5	36	0	44	3	42	11
June 20, 1857	60	1	38	11	26	7	40	6	44	10	42	8
June 27, 1857	61	6	37	7	27	9	43	4	45	2	43	11
July 4, 1857	63	5	39	0	27	3	41	11	45	11	44	5
July 11, 1857	63	10	37	8	27	2	40	6	45	4	43	11
July 18, 1857	63	8	37	9	27	9	42	7	45	11	44	4
Aggregate average	62	1	38	3	27	2	40	10	45	3	43	8
Same time last year	72	11	39	3	25	5	48	8	44	4	42	6

COMPARATIVE AVERAGES—1857-56.

From last Friday's *Gaz.*		s.	d.	From *Gazette* of 1856.		s.	d.
Wheat	81,704 qrs.	63	8	Wheat	71,360 qrs.	76	3
Barley	1,038	37	9	Barley	1,688	40	4
Oats	6,102	27	9	Oats	6,390	26	11
Rye	76	42	7	Rye	29	52	0
Beans	2,698	45	11	Beans	1,851	46	0
Peas	261	44	4	Peas	267	43	9

FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT.



PRICES OF SEEDS.

BRITISH SEEDS.

Tares, new, per bushel..................6s. 0d. to 6s. 6d.
Mustardseed, per bushel .... 12s. to 13s.
Coriander, per cwt............................ 20s. to 24s.
Canary, per qr.................................. 74s. to 86s.
Linseed, per qr., sowing —s. to —s...crushing 70s. to 71s.
Linseed Cakes, per ton ....£9 10s. to £10 0s.
Rapeseed, per qr.................................. 70s. to 72s.
Rape Cake, per ton......................£5 0s. to £5 10s.

FOREIGN SEEDS. &c.

Tares, per bushel, new.................... 4s. 3d. to 4s. 6d.
Hempseed, small, per qr. .... —s. to 44s...Do. Dutch 46s.
Coriander, per cwt............................ 15s. to 20s.
Carraway ,, ... 42s. to 46s.
Linseed, per qr., Baltic ..68s. to 71s...Bombay 70s. to 72s.
Linseed Cake, per ton......................£9 10s. to £10 0s.
Rapeseed, Dutch .... 76s. to 80s.
Rape Cake, per ton......................£5 0s. to £5 10s.

HOP MARKET.

BOROUGH, Monday, July 27.—The reports from the plantations received this morning continue to exhibit every appearance of a severe blight, and the chances of an average crop are daily becoming less certain. Our market continues very firm, with a fair demand for fine samples, the stock of which on offer is but limited. Duty, £110,000.

MAIDSTONE, July 23.—The accounts we receive from the different plantations are various, and somewhat contradictory. In some instances we learn that the hops are doing very well, although they are much infested with vermin, while other parties say the plant is now in a precarious condition, and fears of a blight are expressed. From our own observations we are generally improved since our last report, and this belief is somewhat borne out by the circumstance that the backers of the duty have made an advance.—*Sussex Express.*

POTATO MARKETS.

BOROUGH AND SPITALFIELDS, Monday, July 27. Since Monday last, the supplies of potatoes on sale in these market have been seasonably good. A full average business is doing in them, at 2s. to 6s. per cwt. The imports have been only 36 baskets from Rotterdam.

COVENT GARDEN MARKET.

LONDON, Saturday, July 25.—Of fruit of ordinary kinds there is a heavy supply, except Strawberries, which are nearly over. Cherries are still plentiful and cheap. Pineapples are also a trifle cheaper. Of West India Pines there have been large arrivals. New Apples and Pears are beginning to make their appearance. French salading is still supplied. Among vegetables are Peas, French Beans, and Cauliflowers; the latter are realizing from 2s. 6d. to 3s. 6d. per dozen. Cucumbers are plentiful. Barcelona Nuts fetch 22s. per bushel; New Spanish and Brazils, 18s. do. The supply of Oranges is limited. Cut flowers consist of Orchids, Chinese Primulas, Gardenias, Heliotropes, Lily of the Valley, Geraniums, Violets, Mignonette, Heaths, and Roses.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Pineapples, per lb.	3	0 to	6	0	Pears, per doz.	0	0 to	0	0
Grapes, per lb.	2	0	5	0	Apples, per half sieve	2	0	4	0
Oranges, per 100	8	0	16	0	Kent Cobs, per 100lbs.	0	0	0	0
Lemons, per dozen	1	0	2	0	Strawberries, per pun.	0	6	1	0
Cherries, per lb.	0	2	1	0	Melons	2	0	4	0
Peaches, per doz	8	0	18	0	Nectarines, per doz.	6	0	12	0

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Cabbages, per dozen	0	9 to	1	3	Tomatoes, per dozen	3	0 to	4	0
Cauliflowers each	0	2	0	4	Artichokes, each	0	4	0	6
Broccoli, per bunch	0	0	0	0	Ditto, per half sieve	0	0	0	0
Asparagus, per bundle	1	6	6	0	Shallots, per lb.	0	6	0	8
Rhubarb, per bundle	0	3	0	6	Garlic, per lb.	0	6	0	8
French Beans, per hf sv.	2	6	4	0	Lettuce, Cos., per score	1	6	3	0
Potatoes, per ton	80	0	170	0	Endive, per dozen	2	0	3	0
Do. per bush.	2	0	2	9	Radishes, turnp, per doz.	1	0	2	0
Do. new, per cwt.	6	0	18	0	Small Salad, per punnet	0	2	0	3
Carrots, new per bunch	0	4	0	8	Horseradish, per bundle.	1	6	4	0
Turnips, per bunch	0	4	0	8	Mushrooms, per pottle	1	6	2	6
Spinach, per sieve	1	0	1	6	Parsley, per bunch	0	2	0	4
Cucumbers, each	0	6	1	0	Basil, green, per bunch	0	6	0	9
Beet, per dozen	1	0	2	0	Marjoram, per bunch	1	0	0	0
Celery, per bundle	1	6	2	0	Savory, per bunch	0	2	0	0
Leeks, per bunch	0	1½	0	2	Mint, green, per bunch	0	2	0	4

CHICORY.

LONDON, Saturday, July 25.—We have very little change to notice in the value of either English or foreign Chicory, the supply of which is tolerably good. The demand is far from active.

ENGLISH, per ton	£0	0 to	£0	0	HAMBURG	£0	0 to	£0	0
HARLINGEN	12	10	13	0	BELGIUM	12	10	13	0
FLANDERS	0	0	0	0	GUERNSEY	0	0	0	0

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.:	s.	s.	CHEESE, per cwt.:	s.	s.
Friesland	100 to	106	Cheshire	78	84
Kiel	100	104	Cheddar	74	84
Dorset	100	106	Double Gloucester	60	74
Carlow	100	106	Ditto new	58	66
Waterford	—	—	HAMS, York	90	100
Cork,	88	100	Westmoreland	90	100
Limerick	84	90	Irish	84	96
Sligo	90	100	BACON: Wiltshire, dried	88	92
Fresh, per dozen..12s. 0d. to 13s. 0d.			Irish, green	78	84

ENGLISH BUTTER MARKET.

LONDON, Monday, July 27.—Our trade rules much the same as last week.

Dorset, fine .... per cwt. 108s. to 110s.
Ditto, middling.................. 100s. to 102s.
Devon .... 102s. to 104s.
Fresh .... per doz. lbs. 11s. to 13s.

OIL MARKET.

OILS.

Olive, Florence, half-chests	£0	18	0 to	£1	1	0
Lucca	6	15	0	7	0	0
Gallipoli (252 gals)	55	0	0	56	0	0
Spanish	53	0	0	54	0	0
Linseed (cwt.)	1	18	6	1	19	0
Rape, Pale	2	12	9	2	13	0
Brown	2	10	0	0	0	0
Cod (tun)	48	0	0	48	10	0
Seal, Pale	44	0	0	45	0	0
Do. Brown, Yel. &c	41	0	0	43	0	0
Sperm	86	0	0	89	0	0
Head Matter	96	0	0	0	0	0
Southern	42	0	0	45	0	0
Cocoa-nut (cwt.)	2	7	6	2	9	6
Palm	2	2	0	2	6	6

RESIN.

Yellow (per cwt.)	£0	5	9	0	6	6
Transparent	0	5	9	0	6	6

PITCH.

British (per cwt.)	£0	6	9	0	7	0
Archangel	0	10	6	0	0	0
Stockholm	0	12	0	0	0	0

TURPENTINE.

Spirits (per cwt.)	£2	2	6	0	0	0
In Puncheons	2	0	0	2	1	6
Rough	0	10	0	0	10	6

TAR.

American	£0	15	6	0	0	0
Archangel	0	16	0	0	0	0
Stockholm	0	16	0	0	0	0

WHALEBONE.

Greenland, full size (per ton).	£370	0	380	0 0
South Sea	0	0	335	0 0

FLAX, HEMP, COIR, &c.

LONDON, Saturday, July 25.—There is a steady business doing in Hemp, at full quotations; Petersburgh clean £34 5s. to £34 10s., outshot £33 to £33 10s., half-clean £31 to £31 10s., Riga Rhine £35 to £35 10s. per ton. In Flax very little is doing; but Jute and Coir goods command full prices.

LEADENHALL LEATHER MARKET.

LONDON, Saturday, July 25.—Crop hides, shoulders, and butts have been in good request, at very full prices. In other kinds of Leather only a moderate business is doing.

CROP HIDES.

ENGLISH.

lbs.	lbs.	d.	d.
28 to	35	18 to	20
36	40	18	20½
40	45	18	21
46	50	19	22
50	55	19	22
55	60	19	22

BUTTS.

ENGLISH.

lbs.	lbs.	d.	d.
14	16	23	27
17	20	23	27
21	24	23	27
25	28	24	27
29	32	24	27
33	36	24	27

FOREIGN.

lbs.	lbs.	d.	d.
14	16	22	25
17	20	22	25
21	24	23	26
25	28	24	27
29	32	25	28
33	36	25	28
36	45	—	—
45	50	—	—

OFFAL.

	d.	d.
English Shoulders	16	20
Do. Cheeks and Faces	10	12
Do. Bellies	10	12
Do. Middles	13½	14½
Foreign Shoulders	15	17
Do. Necks	11	13
Do. Bellies	9½	11½
Do. Middles do.	13	14
Dressing Hide Shoulders.	13	16
D. do. Bellies	10	11
Kip Shoulders	5	8
Do. Bellies	5	5½

DRESSING HIDES.

	lbs.	lbs.	d.	d.
Common	20 to	24	17 to	18
Do.	25	28	17	18
Do.	30	34	17	18
Do.	35	40	17	18½
Saddlers	30	35	18	20
Do.	36	50	19	21
Bulls			15	16
Shaved	14	16	20	21
Do.	17	19	19	20
Do.	20	23	18	20
Do.	24	28	18	19
Scotch do.	16	24	18	21
Coach, per Hide			30s. to	36s.

HORSE BUTTS. Shaved.

	d.	d.	d.	d.
English	17 to	18	18 to	20
Spanish	16½	18	18	20

HORSE HIDES.

	lbs.	lbs.	d.	d.
English	13 to	18	15 to	17
Do. without butts	9	14	15	17
			s. d.	s. d
Spanish salted, without butts, per hide.	6	9	12 0	18 0
Do. do. do.	9	11	14 0	20 0
Do. do. do. inferior			9 0	12 0
Do. dry do.	6	8	10 6	16 0
Do. do. do.	9	11	12 0	18 0
Do. do. do. inferior			8 0	11 0

CALF SKINS.

Av. weight. lbs.	lbs.	Unrounded. d.	d.	Rounded. d.	d.
20 to	28	18 to	22	21 to	28
30	35	19	24	22	28
35	40	19	24	22	28
40	45	20	25	22	29
45	50	20	25	22	30
50	55	20	24	21	29
55	60	19	24	21	28
60	70	19	23	21	27
70	80	19	22	20	26
80	90	18	21	20	24
90	100	18	21	20	24
100	120	17	20	19	22

KIPS.

	lbs.	lbs.	d.	d.
Petersburgh	4 to	7	21 to	26
Do.	7	9	21	25
Do.	9	10	20	23
Do.	11	13	19	22
E.Ind.drysltd.	5	7	22	26
Do. do.	7	9	21	24
Do. seconds			19	22
Do. thirds			16	19
Do. inferior			13	16

SUNDRIES.

	s.	s.
Hog Skins, best each	14 to	21
Do. seconds ,,	8	14
Seal Skins, split, per doz.	64	80
Do. for bindings ,,	40	84
Calf Skins, Sumach, tanned ,,	50	68
Do. white ,,	30	45
Horse Hides, white, each	8	14
Sheep Skins—	d.	d.
Basils, unstrained, per lb.	9	15½
Do. strained ,,	9	16
Do. facing, per doz.	6s.	18s.
Tan, Sheep, & Lambs ,,	10	20
White Sheep, per 120	80	110
Do. Lambs, ,,	60	110
Do. Sheep & Lambs, strained, per doz.	7	16
Sumach Roans, per doz.	20	38
Do. Skivers, ,,	10	16
Bark Skivers, ,,	9	16
Hide Splits, per lb.	11 to	12½

HIDE AND SKIN MARKETS.

LONDON, Saturday, July 25.

MARKET HIDES.	s.	d.	s.	d.
56 to 64lbs. per lb.	0	5 to	0	5¼
64 to 72lbs.	0	5¼	0	5½
72 to 80lbs.	0	5½	0	5¾
80 to 88lbs.	0	5¾	0	6
88 to 96lbs.	0	6	0	6¼
96 to 104lbs.	0	0	0	0
104 to 112lbs.	0	0	0	0

	s.	d.	s.	d.
HORSE HIDES, each	10	0 to	0	0
CALF SKINS, light	3	0	5	0
Do. full	8	0	0	0
LAMBS	2	6	4	0
Half-breds	0	0	0	0
Downs	0	0	0	0
Shearlings	1	8	2	4

BIRMINGHAM, Saturday, July 25.

HIDES. Per lb.	s.	d.	s.	d.
95lbs. and upwards	0	0	0	6⅛
85lbs. to 94lbs.	0	0	0	6⅛
75lbs. to 84lbs.	0	0	0	6¼
65lbs. to 74lbs.	0	0	0	5⅞
56lbs. to 64lbs.	0	0	0	5½
55lbs. and under	0	0	0	5⅛
Cows	0	4⅞	0	5
Flawed and irregular	0	4¾	0	5⅛
Horse each	0	0	0	0
Bulls	0	0	0	4⅜

CALF. Per lb.	s.	d.	s.	d.
17lbs. and upwards	0	6	0	0
12lbs. to 16lbs.	0	7⅜	0	0
9lbs. to 11lbs.	0	0	0	0
Light	0	7⅛	0	0
Flawed and irregular	0	5⅝	0	0
WOOL SKINS	0	0	0	0
PELTS	1	11½	2	10
LAMBS	2	11	4	10

BARK, &c.

LONDON, Saturday, July 25.

	£	s.	£	s.
English, per load of 45 cwt., del. in London	16	0 to	18	0
Coppice	16	0	19	0
Dutch, per ton	5	0	5	5
Hambro'	4	10	5	5
Antwerp Tree	6	0	6	10
Do. Coppice	6	10	7	0
French	0	0	0	0
Mimosa	8	0	9	0
Do. Ground	9	0	10	0

	£	s.	£	s.
Cork Tree, Barbary	7	0	7	10
Do. Leghorn	6	0	7	0
Valonia, Smyrna, p. ton	13	0	16	10
Do. Camata	15	0	16	0
Do. Morea	11	0	13	0
Terra Japonica Gambier	17	10	18	0
Terra Japonica Cutch	64	0	66	0
Divi Divi	10	0	11	10
Myrabolams	8	0	13	0
Sumach, Sicily, p. cwt.	0	13	15	6

TIMBER.

LONDON, Saturday, July 25.—Our market continues in a most inactive state. We have no actual change to notice in prices, but there are sellers on lower terms.

Per load—	£	s.	£	s.
Quebec, red pine	3	10 to	4	10
Yel. Pine	3	10	4	0
Quebec Oak, White	6	0	6	10
,, Birch	4	0	4	15
,, Elm	4	10	5	10
Dantzic Oak	4	0	6	0
Memel Fir	3	10	4	5
Swedish	2	10	3	0
Masts, Qubc. Red Pine	6	0	6	10
Do. Yellow Pine	5	0	7	0
Lathwood, Dantzic fm	8	0	10	0
Do. Memel	10	0	11	0
Do. Quebec	5	0	5	5
Deals, per C. 12 ft. by 3 by 9 in.:				
Quebec Wh. Spruce	9	0	11	5
Do. Red Pine	11	10	17	5
St. John Wh. Spruce	11	11	15	0

	£	s.	£	s.
Deals, Yel. Pine, per reduced C.:				
Canada, 1st quality	15	10 to	16	10
Do. 2nd do.	11	0	11	10
Archangel Yellow	16	0	16	10
Memel	13	0	15	0
Gothenburg Yellow	13	0	14	0
Do. White	11	0	12	0
Gefle Yellow, 14 ft.	30	0	31	0
Christiania, per C. 12 ft. by 3 by 9 in.:				
Yellow	24	0	30	0
White	21	0	25	0
Deck Plank, Dantzic, per 40 ft. by 3 in.	1	0	1	10
Staves, per Standard M.:				
Quebec Pipe	80	0	0	0
Do. Puncheon	20	0	23	0
Baltic Crown Pipe	145	0	150	0

HAY MARKETS.

Saturday, July 25.—SMITHFIELD.—Supply tolerably good, and trade dull.

CUMBERLAND.—A full average supply, and a sluggish demand.

WHITECHAPEL.—Both hay and straw sold slowly, at our quotations.

At per Load of 36 Trusses.

	Smithfield.		Cumberland.		Whitechapel.	
OLD MEADOW HAY	56s. to	84s.	56s. to	86s.	55s. to	84s.
NEW DITTO	55s.	80s.	55s.	80s.	55s.	80s.
OLD CLOVER	70s.	100s.	70s.	105s.	70s.	105s.
NEW DITTO	70s.	90s.	70s.	90s.	70s.	90s.
STRAW	28s.	32s.	28s.	32s.	28s.	32s.

SPIRITS.

LONDON, Saturday, July 25.—There is a very inactive inquiry for Rum, and prices have had a downward tendency. Proof Leewards 2s. 7d. to 2s. 8d., East India 2s. 7d., foreign, proof to 10 per cent. over, 2s. 6d. to 2s. 8d. per gallon. Brandy is heavy, but we have no further change to notice in the quotations. Geneva is selling at 3s. to 3s. 10d. per gallon. No change in British spirits.

RUM.

	s.	d.	s.	d.
E. India, proof per gal.	2	7 to	0	0
Leewards, do.	2	7	2	8
,, 10 to 20 O.P.	3	6	3	10
,, 21 29 ,,	4	0	4	6
Demerara 30 34 ,,	4	8	4	10
,, 34 40 ,,	5	0	5	1

	s.	d.	s.	d.
Jamaica. 26 to 29 O.P.	5	1 to	5	4
,, 32 36 ,,	5	6	5	10
Better qualities 32 36 ,,	6	0	6	2
Superior Marks 36 40 ,,	6	2	6	4

BRANDY—COGNAC.

Vintage	Shipped by Martell. s.	d.	s.	d.	Shipped by Hennessy. s.	d.	s.	d.	Shipped by Otard. s.	d.	s.	d.	Shipped by Viny. Proprietors' Company. s.	d.	s.	d.
1854	16	0	17	2	16	0	17	2	0	0	0	0	0	0	0	0
1855	15	8	16	0	15	8	16	0	15	8	16	0	0	0	0	0

Hhds. 2d. per gallon higher. Puncheons scarce.

Other Shippers	6	6 to	12	0
HOLLANDS, Geneva fine, for duty	3	8	4	5
Other qualities, to arrive and on the quay	3	2	4	0
BRITISH GIN, for exportation, proof hhds	3	10	4	0

BRITISH SPIRITS.

GIN, proof, cash	10	2	0	0

TALLOW.

Particulars of Tallow.

	1853.	1854.	1855.	1856.	1857.
	Casks.	Casks.	Casks.	Casks	Casks.
Stock this day	18673	33618	44827	13227	13965
Price of Y.C.	51s. 0d. to —s. 0d.	66s. 6d. to —s. 0d.	55s. 0d. to —s. 0d.	51s. 0d. to 51s. 6d.	58s. 9d. to —s. 0d.
Delivery last week	1114	739	2468	2079	1526
Do. from 1st June.	12256	8689	13665	17655	10393
Arrived last week.	1113	776	749	3438	1781
Do. from 1st June.	7613	6804	18777	13175	11214
Price of Town	52s. 9d.	67s. 0d.	50s. 6d.	53s. 6d.	60s. 3d

OFFICIAL MARKET LETTER.

[Issued by the Trade every Friday Night.]

	s.	d.	s.	d.
Town Tal., p. cwt	60	3	0	0
Fat by ditto	3	2½	0	0
Melted stuff	45	0	0	0

	s.	d.	s.	d.
Rough stuff	27	6	0	0
Graves	17	0	0	0
Good Dregs	7	0	0	0

BREAD.

LONDON, Saturday, July 25.—No alteration in the prices of Wheaten Bread in the metropolis this week.

Wheaten Bread, per 4lbs. Loaf	8d. to	9d
Household Do. ,,	6d.	7½d.

WOOL MARKETS.

BRITISH WOOL MARKETS.

LONDON, MONDAY, July 27.—The firmness with which the public sales of colonial wools are progressing, has considerable influence upon our market. The business doing is not extensive, yet there are very few holders willing to sell, unless on higher terms. Some orders have come in from Belgium; and the supply of wool here is very moderate.

Per pack of 240lbs.

Fleeces—Southdown Hogs	£18	10	to	£19	10
Do. Half-bred Hogs	18	0		18	10
Do. Kent	17	0		18	0
Do. Southdown Ewes and Wethers	17	0		17	10
Do. Leicester do.	16	0		17	0
Sorts—Clothing, picklock	22	0		23	0
Do. Prime and picklock	19	10		20	0
Do. Choice	18	0		19	0
Do. Super	17	0		18	0
Do. Combing—Wether matching	22	0		23	0
Do. Picklock	19	10		20	0
Do. Common	16	0		17	0
Do. Hog matching	23	10		24	0
Do. Picklock matching	20	10		21	10
Do. Super do.	17	10		18	10

DONCASTER WOOL MARKET, July 25.—There was only a small supply of wool, and fewer buyers in attendance. The trade was less brisk than last week, and inferior clips rather lower towards the close of the market.

YORK WOOL MARKET.—The supply of wool has been about 300 sheets, nearly all of which was sold, but the business lacked animation. Moor wools are again in slow demand, at rates having a downward tendency.

LIVERPOOL WOOL MARKET, JULY 25.

SCOTCH WOOL.—There has been very little doing in laid Highland wool this week, as most parties have supplied themselves with a little at the fairs. White Highland: scarcely anything come to market yet. Cheviot and crossed: there has been little doing, no doubt from the same cause as in the case of laid Highland.

	s.	d.		s.	d.
Laid Highland Wool, per 24lbs.	16	0	to	16	6
White Highland do	18	6		19	0
Laid Crossed do..unwashed	18	0		20	6
Do. do..washed	20	0		21	6
Laid Cheviot do..unwashed	21	0		22	6
Do. do..washed	22	6		26	0
White Cheviot do..washed	38	0		40	0

FOREIGN WOOL.—The market was pretty well cleared of all useful wools at the sales, and although the London sales are going off at an advance, with the light stocks here it can scarcely be said that it does more than strengthen the market for anything to come in.

FOREIGN WOOL MARKET.

Per lb. Duty Free.	s.	d.		s.	d.
German, Saxon, and Prussian. 1st and 2nd Elect	3	4	to	4	6
Prima	2	4		3	0
Secunda	2	0		2	4
Tertia	1	8		1	10
Australian & V.D. Land—Combg. & Clothg	1	4		3	2
Do. Lambs	1	8½		2	2½
Do. Locks and Pieces	0	10½		2	1½
Do. Grease	0	10		1	3½
Do. Skin and Slipe	1	4		2	1½
S. Australian & S. River—Combg. & Clothg	1	6		2	6
Do. Lambs	1	6½		2	2½
Do. Locks and Pieces	1	1½		1	7½
Do. Grease	0	7½		1	4
Do. Skin and Slipe	1	8		2	2½
Cape—Average Flocks	1	0		2	2½
Do. Combing and Clothing	1	1		2	1½
Do. Lambs	1	4½		2	1½
Do. Locks and Pieces	1	3		1	10½
Do. Grease	0	8½		1	5

MANURES.

PRICES CURRENT OF GUANO, &c.

PERUVIAN GUANO, (per ton, for 30 tons) nominal	£13	5	0	to	£0	0	0
Do. Do. (under 30 tons)	14	0	0		0	0	0
BOLIVIAN GUANO none	0	0	0		0	0	0

ARTIFICIAL MANURES, &c.

Nitrate Soda (per ton)	£22	0	0	to	£23	0	0
Nitrate Potash or Saltpetre	29	0	0		30	0	0
Sulpht. Ammonia	17	10	0		18	10	0
Muriate ditto	22	0	0		23	0	0
Superphospht. of Lime	6	0	0		0	0	0
Soda Ash, or Alkali	0	0	0		8	0	0
Gypsum	2	0	0		2	10	0
Coprolite	3	15	0		4	0	0

	£	s.	d.		£	s.	d.
Sulph. of Copper or Roman Vitriol, for Wheat steeping	42	0	0	to	43	0	0
Salt	1	5	0		2	0	0
Bones, Dust, per qr.	1	5	0		1	6	0
Do. ½-inch	1	4	0		1	5	0
Oil Vitriol, concentrated, per lb.	0	0	1		0	0	0
Do. Brown	0	0	0¾		0	0	0

OIL-CAKES.

Linseed-cakes, per ton—						
Thin American, in brls. or bags	£10	10	0	£11	0	0
Thick do. round	10	0	0	0	0	0

Marseilles	£10	0	0	to	£0	0	0
English	10	5	0		10	10	0
Rape-cakes, pr ton	6	5	0		6	10	0

JOHN KEEN, 35, Leadenhall-street,
(Late Odams, Pickford, and Keen.)

Williams & Co., 24, Mark Lane—Azotic £6 10 0

Manufactured by Hodgson & Simpson, Wakefield, and Matthews & Co., Driffield.

Ammonia-Phosphate and Nitro-Phosphate	per ton	£8	0	0
Superphosphate of Lime	,,	7	0	0

Agricultural Chemical Works, Stowmarket, Suffolk.

Prentice's Cereal Manure for Corn Crops	per ton	£8	10	0
Prentice's Turnip Manure	,,	7	0	0
Prentice's Superphosphate of Lime	,,	6	10	

Lancashire Manure Company, Widnes, near Warrington.

J. Knight & Co.'s Nitrogenized Bone Manures .... per ton £8 15 0

Manure Works, Grovehill, Beverley.

Tigar & Co.'s Celebrated Turnip Manures .... per ton £7 10 0

AGRICULTURAL MEETINGS IN 1857.

AUGUST 5 AND 6.—Yorkshire Agricultural Society.—Meeting at York. Entries closed. Secretary, Mr. J. Hannam, Kirk Deighton, Wetherby.

AUGUST 6 AND 7.—The Highland and Agricultural Society of Scotland.—Meeting at Glasgow. Entries closed. Secretary, Mr. J. Hall Maxwell, Albyn Place, Edinburgh.

AUGUST 19, 20, AND 21.—Royal Agricultural Improvement Society of Ireland.—Meeting at Waterford. Entries closed. Secretary, Captain Croker, Upper Sackville Street, Dublin.

SEPTEMBER 10.—Manchester and Liverpool Agricultural Society.—Meeting at Warrington. Entries close August 29. Secretary, Mr. T. B. Ryder, Elliott Street, Liverpool.

SEPTEMBER 17 AND 18.—Sparkenhoe Farmers' Club.—Annual Meeting at Nuneaton. Secretary, Mr. E. Taverner, Hartshill, Atherstone.

SEPTEMBER 23.—Wayland Agricultural Society.—Meeting at Watton. Entries close Sept. 9. Secretary, Mr. H. Woods, Merton, Watton.

OCTOBER 2.—Bedfordshire Agricultural Society.—Meeting at Leighton Buzzard. Secretary, Mr. T. W. Turnley, Bedford.

OCTOBER 7.—South West Middlesex Agricultural Society. Meeting at Eling. Secretary, Mr. J. Gotelee, Hounslow.

NOVEMBER 30—DECEMBER 1, 2, AND 3.—Birmingham Cattle and Poultry Show, at Birmingham. Secretary, Mr. J. Morgan, Bingley Hall, Birmingham.

NOVEMBER (Towards the close).—Abingdon Fat Cattle Show. Hon. Secretary, Mr. Chas. Cox.

DECEMBER 8, 9, 10, AND 11.—Smithfield Club Cattle Show, at the Baker Street Bazaar, London. Secretary, Mr. Brandreth Gibbs, Half-Moon Street, Piccadilly, London.

DECEMBER 7, 8, 9, 10, AND 11.—Various Meetings of the Royal Agricultural Society of England, of the Smithfield Club, and of the Farmers' Club, at their several Offices in London.

[We shall continue the occasional insertion of this List throughout the year, and add to it as other Societies make their arrangements, of which we shall be obliged by early notice.]—EDITOR M. L. E.

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THE FARMER'S MAGAZINE.

SEPTEMBER, 1857.

PLATE I.

A DEVON OX,

EXHIBITED BY MR. W. HEATH, AT THE SMITHFIELD CLUB FAT CATTLE SHOW, DECEMBER, 1856.

It is long since the Devons have had such a turn as they enjoyed at the last Smithfield Club Show. This ox appeared as the especial champion of his order, and in that character took the first prize of 25 sovs. as the best Devon steer or ox above three years old, and the GOLD MEDAL as "The best steer or ox in any of the classes." He was fed and shown by a gentleman well known for his successes in this way—Mr. William Heath, of Ludham Hall, Norwich; but was bred by Mr. John Passmore, of Bishop's Nympton, South Molton, who in due course also received a silver medal as the breeder of the best ox. To complete this brief history, we may add that the ox was purchased in the show-yard by Messrs. C. and G. Davies, of the Black Bull, New Cattle Market. Our own Commissioner speaks of him as "a very complete, well-formed animal; his breast-end not sufficiently prominent, his twist good, but hips too near."

PLATE II.

FRANCESCO; A MEXICAN PONY.

ENGRAVED BY E. HACKER FROM A PAINTING BY E. CORBET.

This beautiful pony was one of the "lions" of the late great agricultural meeting at Salisbury. In his way, he was generally pronounced to be one of the most perfect animals on the ground. Unfortunately, however, there was no distinct class for ponies, and so Francesco had to enter amongst the hack stallions. This was certainly as curious a lot as we ever saw brought together; beginning with our small friend, and running up through Arabians and race-horses to great heavy machiners. Although not even "commended," as he well might have been, Francesco was undoubtedly the most popular of his "set." Long-headed, keen judges at once pronounced him "a neat-'un;" lads from school were for buying him outright, there and then; and ladies begged for places to look at "the pretty creature." Mr. Bullock Webster, too, made a capital showman, and we are quite sure we are only "embodying the feeling of the meeting" in proposing a vote of thanks to him for his support on this occasion.

Francesco is a beautiful dark brown, now some eight or nine years old. As will be gathered from the title to the print, he was presented a few years since by Her Majesty to Mr. Webster. This gentleman, however, has been unable to obtain for us any particulars of Francesco's previous history. He has now been for some time at Gnoll Castle, in South Wales; where the portrait, which makes him far better looking than the print, was taken by Mr. Corbet. As a cross for the Welsh pony it would be almost impossible to find anything better; and as Mr. Webster is careful to pick him good mares, we expect to see some produce that may hereafter show to equal credit with their sire. His entry at Salisbury, it is by no means impossible, may lead to the establishment of a class for ponies at future meetings of the Society. The subject was mooted during the week, and Francesco cited, as we give him here, in becoming illustration.

TO WHAT IS SEWAGE APPLICABLE?

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

The report of the three engineers, appointed by our Government to examine the plan of M. Bazalgette for the main drainage of London, has just appeared. Adopting the general outline of the plan proposed by the engineer of the Metropolitan Commissioners, they advise the construction of much larger, far more extensive works. They suggest that trunk sewers should be formed capable not only of taking away the present amount of London sewage, but that they should be capacious enough to receive that of a future London, and also the large amount of ordinary rainfall. This bold and comprehensive view will probably be carried out; it will most likely end in the outlet for these main-trunk sewers being placed nearly, if not quite, on the sea shore. To reach this distance, and to ensure a sufficiently rapid flow, higher levels than those once suggested will most probably be necessary; more powerful steam engines will be needed. Such an arrangement will not be without still greater interest to the farmers of Essex and Kent. The more elevated the bed of the sewer, the more easily are its contents rendered available for irrigation, and there is abundance of grass land, between the metropolis and the German ocean, to profitably employ and deodorise all the sewage produced by even far more than 2,000,000 of inhabitants. I would most earnestly impress the importance of these considerations upon those who will have the construction of these huge drains; my own opinion rather inclines towards a direct line of trunk sewers towards the sea. I am aware that immediately bordering the Essex shores of the German ocean, there are marshes of such sufficient magnitude as to employ all the great mass of foul waters with which we have to contend. It is here that we find those extensive sweeps of marsh land so placed, as to be unfit for the habitation of man; here there are no dwellings congregated in villages, nor even solitary farm-houses; they have the open water for a boundary; they are below the level of the sea at high tide; they many of them rest on substrata of sand or gravel, of all sites the best for that underdrainage so essential to the successful irrigation of grass.

The proposed employment of this sewage in agriculture has given rise to considerable discussions as to its being adapted for watering arable soils, especially to those bearing the cereals. The arguments have been carried on with an abundant verbiage, and a zeal which but too often barely escaped being offensively personal, and often totally neglectful of certain well known agricultural facts, which must modify several broad assertions hazarded during the controversy, and render others very inapplicable in our climate.

It must be remembered on all occasions, in any proposed irrigation, that when we are watering the soil, the liquid employed is either for the mere water it contains, or for the impurities dispersed through it, or for both. Now it happens, in the case of the grasses that the rainfall in our climate is not sufficient to produce a maximum amount of growth. We can trace the effect of varying amounts of moisture in travelling from the driest to the wettest side of our island. The produce of the pastures of Norfolk will, in this respect, bear no comparison with those of Shropshire and Herefordshire. The sandy soils of Cheshire yield an amount of grass which would be reduced to mere sheep-walks, if they were transferred under the far less rainfall of Suffolk. The moist climate of the west of England accounts for this widely different value of the pasturage; still the most copious rainfall of even western England fails to produce the maximum amount of grass; more water may be still profitably applied to the meads. The West of England farmer acts upon this conviction and upon this experience. He forms water-meads; he employs in need even the purest waters—meaning by that, water nearly free from earthy matters, springs which are just bubbling out of the chalks of the vale of the Itchen, or the Kennett, or the equally bright spring waters of the oolite in the vale of Wardour. And mark how copiously he applies that nearly pure water. Note what Mr. Combes, of Chicksgrove, said at the Salisbury Meeting, when speaking of the fine water-meads of the banks of the Wiltshire Avon. "The average quantity of water used for irrigating these meadows," he observed, "is about 2,000 gallons a minute per acre." And he adds, in another portion of his valuable communication—a lecture the more valuable as coming from a first-rate practical authority—"A good flow of water, or what is called thick watering, is always to be preferred to that of thin watering, especially during the summer months; for a very thin watering for a week or more together, at summer time, especially on a clay soil, is oftentimes injurious. I may here remark

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that night watering is preferable to watering by day, and the water will do more good in shady than in sunny weather. The water of the streams in this part of the country runs from the chalk, the upper green sand, and the upper oolite formations. That best adapted for irrigation is pure spring water. The water which produces the richest vegetation I have ever seen is from the oolite formation in the vale of Wardour; it has been analyzed, and was found to be remarkable for its purity; its soluble contents were the chlorides of sodium, calcium, and magnesium, in very small proportions; it presented no trace of any other metallic salts, and was in all other respects an unusually fine specimen of natural water; its saline contents were barely sufficient to give an opaline appearance to a solution of soap, and it was singularly free from the quality of hardness. The temperature of this water is three degrees lower, in the months of May and June, than the river water adjoining. Though both are used for irrigation in the same meadow, their effects are wonderfully different. The river water, although warmer, does not produce half so much grass as the spring water, and certain weeds which the land is subject to, such as the cow-parsnip and others, are entirely destroyed on the part watered by the spring; whilst on the part close alongside, watered by the river water, these weeds grow very luxuriantly."

Here, then, we have unanswerable evidence of the good effects of pure water applied in copious proportions to grass; and that such waters are for the same purpose rendered of still greater value by the addition of organic or even earthy matters, the testimony in our possession is equally conclusive. Mr. Combes tells us, in another portion of his address, "The meadows should always be in readiness to receive the first fresh of the river from the autumnal rains, as this water is, especially after a dry summer, rich with alluvial matter." If the washings from higher lands, brought down by the floods, adds richness to the irrigation waters of the chalk formation, still more beneficial are the additions to them of organic matters. The water of the Hampshire Itchen, after it has passed Winchester, and received a portion of the sewage, is known to the owners of the adjoining meads to be more fertilizing than before its arrival at that city. Similar remarks have been made by Mr. Tibbits, in the case of the waters of the river Maun. The pure water-meads of the West of England do not equal in productiveness the foul water-fertilized meads of Clipstone, near Mansfield; they do not approach in their yield of food those of Edinburgh, which are irrigated with water still more impure. We see, then, that for grass lands the amount of water, either bright or impure, which may be beneficially applied, is very large. But how does the remark apply to the cereals? In their use, is there not a directly contrary conclusion to be drawn? We are all aware that with us, the driest portions of our island are precisely those where the largest proportions, and the best wheat and barley, are produced. We see their cultivation more and more neglected as we approach the western sides of our island—that oats, which delight in a moist climate, then gradually take their place. "No summer is too dry for wheat," is the ordinary observation of the farmer. Even in far warmer climates than ours the use of water to cereals is but limited, even in lands where irrigation is much better understood and far more extensively practised than with us. Some of these customs have been traced by Mr. R. Russell, of Kilwhiss (*Quar. Jour. Ag.*, 1854, p. 295.) It was when remarking upon the vast artificial waterings of the Egyptians—their 50,000 water-raising machines in the valley of the Nile, and, after dwelling upon the rice plant, which will only flourish in naturally moist or watered places, that he adds very correctly, that, "comparatively speaking, very little moisture is required by wheat and barley in the almost rainless climate of Egypt. Clover and such kinds of crops are there very largely increased by irrigation, but it would appear that the quality of wheat is deteriorated when grown on irrigated lands; this fact is well known in Arabia. The wheat of Egypt, and that produced on the irrigated lands of Spain, are of very inferior quality; whilst that which is grown on the arid plains of Castile and Syria is of very fine quality."

But although it may be correct that the application of the liquid manure, which we have in this place to consider, is not beneficial to the cereals of our country in their growing state, yet this condition is by no means opposed to the use of sewage for soils on which corn is afterwards to be sown. The practice of the Flemish farmers, in fact, is to apply their liquid manure for all kinds of crops. It is true that, as they have to carry the liquid to the field by horse-labour, they make this liquid as concentrated as possible; that they use only very impure water; that they add to and *ferment* with this their urine, night-soil, rape-cake, soot, and every other enriching substance they can procure; but then there is no reason to doubt but that these skilful farmers would gladly avail themselves of a much weaker liquid manure, if it could be distributed without animal labour over their soils. These farmers, moreover, employ liquid manure *before the seed is sown,* not as a substitute for, but as an adjunct to manure in arable soils. The crops to which they apply manure, and the kind of dressing, were long since given by Mr. Radcliffe in his

"Husbandry of the Netherlands." It is as follows:—

Wheat—Dung or compost 10½ tons.
Rye—Farm-yard dung 10½ tons.
Oats—Ditto 10½ tons.
Flax—866 rape-cakes, dissolved in 2,480 gallons of urine.
Rape-seed—580 rape-cakes, dissolved in 3,200 gallons of urine.
Beans—14 cart-loads of liquid manure, and 14 loads of stable dung, equal together to 21 tons.
Potatoes—14 loads of liquid manure, and 14 loads of stable dung.

The mode in which this semi-fluid manure is applied in Flanders was thus described by Mr. Rham: it includes in few lines several notices of good farming principles:—

"The stubble is well harrowed soon after harvest, in order to pull up the weeds and expose their roots to the sun. In the beginning of October from 10 to 15 tons per acre of good rotten dung are spread evenly over the land, and immediately ploughed-in 6 inches deep: the land is ploughed in stetches or beds, varying from 6 to 12 feet wide, according to the nature of the soil; the heavier soils are laid in the smallest stetches: liquid manure at the rate of 10 hogsheads per acre is then poured into the intervals between the stitches, by means of a water-cart, which delivers it regularly, the horse walking in the interval. The harrows are now drawn across the stetches. This brings a part of the fine soil into the intervals, and prevents the too rapid evaporation of the liquid manure. Six pecks of rye or of wheat, or two bushels of winter barley, are now sown evenly over the land. The manured soil in the intervals is first stirred by the plough going once up and down, as is done between rows of turnips in the Northumberland system, throwing the loose earth in a ridge in the middle. Men follow with shovels, and throw this earth over the seed, as is done with potatoes in lazy-beds in Ireland, and completely cover it. A roller is then passed over, if required; or, in very loose soils, men tread in the seed regularly with their feet, as the gardeners do. The small extent of the farms allows of this garden culture, which in large occupations would be impracticable: but the principle is the same, whether executed by manual labour or machinery."

The addition of certain organic matters to the soil in this way, rather than adding those solid fertilizers without the water with which they are mixed in liquid manure, has the advantage of diffusing those matters more completely through the soil; and there is no doubt that by the fermentation of these nitrogenous substances in water, a much more considerable proportion of ammonia is produced than when the same matters are allowed to decompose with a less considerable proportion of water. These conclusions are entirely in accordance with the observations of Mr. Mechi, on the clay soils of Tiptree Hall. He some time since furnished me with the following digest of the quantity of liquid manure per acre, pumped by means of a steam-engine, on to his farm, at a cost of 3½d. to 4d. per 1,000 gallons, in the season 1852-53: it is as follows:—

Wheat—20,000 gallons, after roots drawn off. None after clover, or it would be too strong.
Barley—15,000 gallons, after cabbage drawn off.
Oats—15,000 gallons, after mangel.
Grasses—60,000 to 100,000 gallons at various dressings.
Roots cannot have too much, say 60,000 to 100,000 gallons per acre.

"The result" (he adds) "is unmistakeable in its profitable results in the case of roots, rye grass, clovers, &c., increasing the crops from 50 to 150 per cent., and preventing failures from wireworm, drought, &c. *Its effects are seen in the subsequent cereal crops.* By liquefied manure, I mean the solid and liquid excrements of animals and human beings fluidized by admixture with large quantities of water: guano added to it improves its effects."

We may conclude, then, from the concurring testimony of the cultivators of soils, widely different as regards the climate in which they are placed, that the use of sewage or other liquid manure is highly beneficial to the grasses, not only from the water applied on it, but from the foreign matters which the liquid contains; but that the application of liquid manure to land to be devoted to the growth of cereals, is chiefly valuable for the solid matter it conveys to the soil.

It is rather a curious and instructive retrospect to follow the slow and irregular introduction of irrigation of any kind. It has had to encounter difficulties in many ways; the outlay necessary to prepare the land, the vested right to the water of streams, the objections raised on sanitary grounds, have all stood in the way of irrigation; and I am not sure but that the remarks of Mr. R. Russell, on the conservative spirit displayed by the Roman agriculturists, far too often applies to those of other and happier lands. It is certainly (as he observes) remarkable how little they profited by the lessons which the agriculture of the nations they subdued might have taught them; and I suspect there is not a little truth in Jethro Tull's remark, that they were so well pleased with the fable of their art of tillage being the invention of Ceres, that they never attempted to improve it, lest they should derogate from the divinity of the goddess in supposing her invention imperfect.

AGRICULTURAL IMPROVEMENT IN IRELAND.

For this year at least, in England, if not in Ireland, we appear likely to be in a great measure exempt from the ravages of the potato-blight.

It is now more than ten years since this mysterious visitant made its first appearance, and mighty are the social changes which have followed in its train. It caused Peel, as his posthumous Memoirs testify, to abrogate the corn laws, which, but for this mysterious little fungus, scarcely visible to the naked eye, he would probably have maintained some years longer, in spite of Cobden and the League. It led the way to the Encumbered Estates Court in Ireland, and it taught the peasantry of that country to solve the great problem of a self-supporting system of emigration. It thinned the redundant population of Ireland, and has added millions of emigrants to replenish and subdue the forests and the prairies of America and Australia. No one who knew Ireland before the potato-blight, and has visited it lately, can fail to be struck by the improvement which has taken place through the agency of this scarcely visible destroyer. It has occasioned fearful suffering, but it has produced much good. The evils of Ireland have been attributed to many causes. We agree with those who trace them to the use of the potato as the exclusive food of the mass of the population. We put out of consideration the minor evils which arise from entire dependence on an article of food which must all be consumed within the year, and does not, from its nature, permit the surplus produce of one year to be stored in order to supply the deficiency of another. The great, the crying, evil of the potato system was the ease with which it supplied the Irish peasant with subsistence, and the low rate of wages which it engendered. The potato was to him what their fine climate is to the inhabitants of tropical regions. It supplied his wants with too little labour. The ambition of the Irish peasant was bounded by a mud cabin, "convanient," as he phrased it, to a bog. The labour of a few months supplied him with food and fuel. His friend and companion the pig ate out of the same bowl with him, and paid his rent. The sale of a little poultry and butter furnished him with "tobacco and other necessaries," as described in a letter which during the famine year we saw from a wretched cottier. Among these necessaries clothing scarcely appeared to be considered one, with the exception of the long great coat coming down to the heels, in which we have seen the peasantry of those days actually mowing. Whiskey grew, if not on the estate, at least somewhere "convanient" to it, and he knew *where*. Having cut his turf and dug his potatoes, the Irish cotter had nothing to do, during the remainder of the year, but to drink, dance, and talk politics.

Now all is changed. The redundant population has disappeared. They were redundant only because unemployed. They were unemployed because there was nothing on which they could employ themselves but the cultivation, as by courtesy it was called, of the land. Yet, to that land they clung. They would neither more than half-cultivate it themselves, nor allow others to cultivate it better. The failure of the potato broke up the system. No one who has visited Ireland of late, and knew it before, can fail to be struck with the improvement of the last ten years. He sees improvement in the breeds of sheep, cattle, and pigs; in the habitations of the peasantry, in their dress, and in their air. There is less, much less, of that lounging and sauntering which used to strike the traveller as he entered every village and passed every cabin. There is more employment and more steady industry. Whether the benefits of the change might have been gained without so much suffering as accompanied it, is a question on which we will not enter. There were those who saw, very early in the history of the potato blight, that emigration, and emigration on a large scale, was the only remedy. There were those who, like Sir Francis Burdett, urged it as the remedy long before the potato blight made its appearance. There are some who think that if part of the millions which were wasted on useless relief works, or other palliatives, had been applied to assist emigration, much suffering might have been prevented. We had long held that opinion, and urged it on the resident landowners who were paralyzed by the calamity. It was urged, we have reason to believe, on the Government; but they turned a deaf ear to it. Perhaps they were right. We see now, even when the flight of the peasantry is voluntary, the lamentations which in some quarters are raised against the depopulation of the country. From how many quarters do we hear complaints of the advance of wages and the scarcity of labourers! All this would have been laid to the charge of the Government, if they had aided and encouraged emigration; and therefore, though they might have saved much misery by doing so, it is perhaps better that they did not. Want of capital has often been urged as the great want of Ireland. The proceedings of the Encumbered Estates Court have proved that not to be the case. Of all the millions of acres which have passed through that court, fully two-thirds have been purchased with Irish capital.

At the same time we believe it to be undeniable that most of the Scottish and English farmers who have purchased lands in Ireland for the purpose of occupation have done well, and that, when they have acted with prudence and firmness, they have not been unwelcome settlers among the peasantry. Meanwhile the increase of marriages, which recent returns exhibit, prove that there need be no apprehension of a dearth of population in Ireland. On the other hand, the tide of emigration still flows from Ireland, and draws forth unnecessary lamentations in some quarters.

One consideration must be borne in mind—that the humidity of the climate of Ireland renders pasture rather than corn-growing the natural application of its soil. It must be borne in mind, too, that one effect of the potato system was to force into cultivation much rocky land, the natural application of which was to rough pasture for the rearing of cattle.

The change which the potato failure and the Encumbered Estates Court have produced in the ownership and occupation of land in Ireland has given rise to two works under nearly similar titles: "Ireland considered as a Field for Investment or Residence," by Mr. Bullock Webster (1853), and "Ireland estimated as a Field for Investment," by Mr. Thomas Scott (1854). The first of these we noticed some time since; while the latter we have only lately met with. It contains a considerable amount of valuable statistical and agricultural information. We have only room, however, to notice the following summary respecting the agricultural improvement and capabilities of the country. Adverting to the prevalent opinion that, in order to secure solvent and improving tenants, it is necessary that land should be farmed in large masses, the author observes: "In this supposition I do not altogether agree. At all events, I am fully satisfied that native tenants occupying from 20 to 30 *acres* of *good* land are the best rent-payers; and if *they* are to be superseded, men owning more capital and responsibility to the state may be secured, but the change will involve a considerable sacrifice of annual income to the owners of the soil, irrespective of the outlay, to them hitherto unknown, in permanent improvements. A certain change has, no doubt, become necessary and inevitable, arising from the excessive subdivision of land which had been allowed to go on until within these last few years; and it is fortunate that, with this necessity, the compensation for labour in Ireland is gradually becoming sufficient to reconcile the smaller occupiers to the change from pauper tenants to hired labourers. It is not supposed, however, that they are ruthlessly to be dispossessed of their little holdings, to consoidate a farm for a larger capitalist or a stranger; nor will any one think it advisable to become an occupier of their lands under such circumstances; but when, as above supposed, they are found willing voluntarily to vacate their insufficient allotments to become labourers or to emigrate, and where they have been required to do so under fair and humane arrangements, others may take their place with prudence and safety."

Speaking from personal experience, we must declare that we have found the peasantry of Ireland much more disposed to place confidence in an Englishman than in one of their own countrymen.

MIDDLE-CLASS EDUCATION.

The importance and necessity for reforming and extending the institutions for the education of all classes have been repeatedly urged in this journal. In none is it more required than in those establishments devoted to middle-class education. The prevalent error has also been combated, of supposing that special educational establishments are required for the instruction of those destined for different industrial occupations.

We have often contended—and the subject cannot be too often enforced—that the future farmer, merchant, manufacturer, and miner may receive in common the rudiments of knowledge, in which no man should be deficient who pretends to the title of educated, and which are absolutely necessary to those who are to be engaged in bending matter to the uses of man. It has been well said that the powers of man over nature are unlimited, provided only they be exercised in obedience to the laws by which matter is governed, and that we must study those laws as we would the temper of a nation we would govern, or a horse we would ride. We require, then, neither mining nor agricultural nor engineering schools and colleges, but institutions for general instruction in those branches of knowledge which no man should be without, which are applicable, more or less, to every occupation in which a man can be engaged, and are indispensably necessary for some. Our attention has been again directed to this subject by the perusal of two documents connected with industrial education in the west of the island. It might be almost said that science is marching westward. Sir Robert Peel's Colleges, however, have already established it in the far west—at least in our far west. That establishment is, still, but a restoration of knowledge, adapted to the wants of the age, to an island where science took refuge during the dark ages, and whence, as was said of another island, whose schools were an offshoot from it, savage clans and roaming barbarians derived the light of knowledge and the blessings of religion. The success which has attended Sir Robert Peel's Colleges, notwithstanding all the opposition they have encountered from different and opposite quarters, should stimulate to exertion on this side St. George's Channel. Those colleges also point out the objects at which we should aim in such institutions, and show how best to attain them.

The western educational establishments to which we refer are of very different characters and pretensions. They are both deserving of success. We allude to Gnoll College, in the Vale of Neath, which may be said at present to be only *in posse*, and to the humbler Bristol Mining Schools, which may be considered actually *in esse*, since its first annual examination took place very lately. The object of the former of these establishments has been so ably set forth by its promoters as to leave no room for addition. All we can say is, that everything is on the grandest and most liberal scale, whether as regards the professors, the students, or the curriculum. Those who desire further information will find it in the advertisments of the College, and in a work on The Principles of Collegiate Education, as discussed and illustrated in a description of Gnoll College. The work is illustrated by a railway map of England, which shows Gnoll to be so centrally situated that one is almost tempted to think it ought to be the seat of Government as well as of learning; nor, when we read of all the undeveloped resources of the district, can we doubt that Neath is a very rising place.

Taking leave of Gnoll, let us direct a little attention to the proceedings of its humbler neighbour, the Bristol Mining School, in Nelson-street.

Its first annual examination, as we said, has just taken place before Mr. W. W. Smyth, M.A., F.G.S., assisted by Mr. G. S. Greenwell, M.E., and Herbert Mackworth, and — Greenwell, Esqs., Government Inspectors of Coal Mines. Besides the general pupils, several underground agents, we are informed, presented themselves for examination on mining subjects. They were tested for the most part orally; and by the answers, we are told, which were made to some very important and telling questions respecting the direction and management of coal-mining operations, they evinced a considerable degree of intelligence, and, in some cases, a very satisfactory knowledge of some of the more important branches of mining practice. As regards the pupils the answers were given in writing till the afternoon of the second day, when for upwards of three hours answers were given orally to questions put to Messrs Smith, Greenwell, and Mackworth. They were directed chiefly to mineralogy, the chemical and local differences of coal, the management and principles of safety-lamps, the chemical and mechanical properties of gases met with in mining, and the laws and practice of colliery ventilation. Can it be doubted that if correct knowledge on some of these latter points were more generally diffused among working miners and underground agents, we should hear less of those fearful colliery explosions of which we have had so many lamentable instances of late?

So much for the general mining public who presented themselves for examination.

As regards the pupils, we are told that few of them had been in the school longer than four months, while some of them had very limited means of previous education. Much certainly could not be expected under these circumstances. It is added, however, that the progress they had made in an acquaintance with the subjects taught was such as to draw forth from the examiners some highly commendatory remarks. With respect to the course of examination to which the pupils were subjected, it comprised the following subjects—surveying, levelling, plan-drawing, mining and machinery, ventilation, and prevention of accidents, together with geology and mineralogy. Now if we except those points which specially relate to mining, and substitute for them others having special reference to agriculture, adding chemistry also as essential for both, why should not agricultural as well as mining pupils of the same rank in life have received instruction in the same establishment, and have been subjected at the same time to a similar examination. It cannot be said, in this case, that Bristol is situated in a barren mining district, whose mines, minerals, and metals constitute its sole wealth. It is the centre of a district having as great surface value and as great a variety of soil as any in England. It is in an agricultural and a maritime district. It was formerly one of our greatest manufacturing capitals, and still carries on many important branches of manufacturing industry. Why, then, should not the Bristol Mining School be converted into a general school for miners, manufacturers, farmers, aye! and for sailors also? In these days of steam and railway, much of the knowledge which these mining pupils must acquire, in order to reply to the questions of the examiners in a satisfactory manner, is equally necessary for the engineer of a steamer, and the driver of a locomotive.

We hope to hear more about this mining school—how founded and supported. We hope also to hear that it has assumed, or is about to assume, a more general form for the scientific education of those who are to apply their science to practice of various kinds.

In concluding the examination, Mr. Warrington Smyth remarked that no branch of study and industry formed so extensive a field for thought as that of mining. The man who had spent a lifetime in its study and practice would be almost sure still to learn something from every mine he visited, and from every overman and captain with whom he was brought in contact. And is not the same remark equally applicable to agriculture? Is not every day adding something to our knowledge either of its science or its practice? May not every farmer and labourer learn something which might improve their practice? and may not men of science learn something of the secrets of Nature from every farmer and labourer they converse with?

THE TRADE MUSEUM AT SOUTH KENSINGTON.

One of the deficiencies under which we have long laboured in this country is about to be supplied: a good Trade Museum of Animal Products, for general reference, is now in course of formation by the Department of Science and Art, and the nucleus admirably arranged has been thrown open to the public at the South Kensington Museum after a private inspection, by the Queen, and a visit from the nobility and fashionable world. We have at present a good Museum of Vegetable Products at Kew. The East India Company, and Crystal Palace Company, are forming excellent collections of the same kind in other localities. The

British Museum, and the Museum of Economic Geology, in Jermyn-street, supply all that is requisite for reference in the mineral kingdom. The connecting link, therefore, of information bearing upon trade products furnished by the Animal Kingdom will now be easily accessible to the many.

Placed under the able arrangement and general superintendence of Dr. Lyon Playfair, it cannot fail in time to be of high national importance, whether viewed in a purely educational point of view, or as subservient to the equally important purpose of aiding manufacturers and producers, desirous of investigating the value and several commercial uses here and elsewhere of particular products.

One obstacle has hitherto stood in the way of forming a good collection of animal substances, and that is the perishable nature of most of the specimens. Unless great care be taken, wools, furs, skins, leathers, woollen goods, &c., will inevitably decay, or become deteriorated; and the replenishing of these adds largely to the expense and to the trouble.

The antiseptic property of glycerin, and other modern discoveries, and the scientific knowledge, judgment, and experience of so eminent a chemist as Dr. Playfair, will, however, do much towards remedying this defect.

The public advantages of such a collection are self-evident. Beginning with Wool and Hair, here may be quietly examined and studied the quality and character of the various home and foreign wools, in the fleece; in the lock, as viewed under the microscope; scoured, combed, spun, and dyed; or completely manufactured into fabrics separate or combined with other materials, such as with silk and cotton.

The beautiful qualities of alpaca, mohair, the wool of the shawl goat, and other long silky fibres, and their applicability to weaving purposes, are here displayed. Bristles and hair of all kinds, and their applications in the arts and manufactures, follow next; and the implements, machines, and appliances required in the various stages of woollen manufactures, whether of broad-cloths or blankets, carpets, or hosiery, dress materials for ladies, and the various combinations which make up the bulk of our woollen manufactures, and render it the second in value and interest in a national and tradal point of view.

The next of the textile manufactures dependent upon the animal kingdom for the raw material is that of Silk, and the collection is especially rich in silk moths, coons, raw and thrown silk, and silken fabrics from all the principal countries of the world.

The food products furnished by animals will doubtless not be overlooked, for they are very important in all their stages of preparation — fresh, salted, or preserved in various ways. The description of the several fisheries, and the products of the sea, will alone open up a new and wide field for popular illustration, and one that has never yet been treated completely, especially showing the useful modern applications of many formerly waste substances. The products of birds, wild and domestic, for food; their eggs, feathers, dung, &c.—all afford opportunities for diffusing much valuable information, at present little known or appreciated. Indeed, the whole range of animal creation, from the tiniest insect, such as the cochineal and lac coccus, the bee and cantharides, up to the elephant and the whale, which are hunted for the tusks or the oil yielded, may be made subservient to the diffusion of an immense amount of important knowledge. The several processes of spinning and weaving, of tanning and dyeing, the working up of shell, horn, and bone, and numerous other manufacturing arts, can be shown, so as to educate the mind, and diffuse that class of information which is now so much sought after in all channels and among every class of society.

Those who will take the trouble to pay a visit to this novel collection, far from finding it to be, as they might suppose, "all barren," will, to their surprise, come away delighted and gratified with a mass of new ideas, and a stock of general information and reflective thought of which they could have formed no previous conception.

Although yet in its infancy, the portion of the South Kensington Museum devoted to the illustration of the economical uses of Animal Products is, in our estimation, by far the most important of the several collections assembled there, viewed in its bearings upon the commerce of the country, and the amount of popular and useful information it may be made to convey. We are at present sadly deficient in details of any kind connected with animal products. There is no special descriptive work of reference on the subject, and it is difficult to find numerous papers and essays on some of the matters which are spread over the periodical literature.

We would throw out as a suggestion whether it would not be desirable to form the nucleus of a library of reference on cognate subjects in the animal courts, as is being done in the educational department, and other branches of the building. If even only a list of works of reference could be made, and appended to the catalogue, and contributions towards a library were sought from various authors and publishers, the large gap in our commercial literature might be to some extent filled up, and parties seeking information on sheep farming, on poultry breeding, stock raising, leather manufactures, horn, bone, and shell, the river and sea fisheries, the various trades and manufactures, &c., connected with Animal Products, would thus know what pamphlets, treatises, or works had been published; and if not to be seen in this Museum, where they could be obtained or consulted.

The chemical conversion of refuse animal products to useful purposes has, in Dr. Playfair's hands, been made a most interesting and attractive series, showing that nothing is wasted, but every material, however seemingly insignificant, may be turned to profitable use.

HARVEST BEVERAGES.

Among the questions which the season of the year naturally brings under discussion, that of harvest beverages seems just now to occupy considerable attention. The question, like that of boarding farm labourers, brought not long since before the Farmers' Club, of London, is discussed under the double aspect of cheapness to the farmer, and advantage to the labourer. It is only under the latter point of view that we shall treat it. Various are the substitutes proposed for honest John Barleycorn—tea, coffee, cocoa, water, milk and water. Some have even advocated a return to the old Roman *posca*, or vinegar and water, and have assured us that it was much relished by the harvest men—the descendants, it is to be presumed, of some of Cæsar's legionaries.

That the practice, too prevalent in the cider counties, of paying the labourers little money and much cider, is a bad one, does not admit of a question; and that in some districts evils have resulted from giving him too much home-brewed beer, and too little money, wherewith to buy food and raiment for the family, is not to be denied.

We knew a small farmer of the olden time, some thirty years back, in the Weald, which is a cider district, who made it a rule that all cider grown upon the farm should be consumed upon the farm. Acting on this principle, he consumed a fair share himself, and dealt it out most liberally to his men. It was a very rough cider certainly, very little of which went a great way with those who were not to the manner born; but it had its admirers, and it is incredible what quantities of it a seasoned vessel would hold.

It is needless to add that among a certain class of labourers our friend was very popular. Whether he carried out this principle of home-consumption with respect to the other produce of the farm we do not recollect, neither do we know how—if he did—he managed to pay his rent The secret, however, we believe to be, that he had no rent to pay, but was one of the cultivating proprietors of those days. They might be bad farmers, compared with those of the present day; they were certainly not very scientific; they knew nothing of the short-horns and the Leicesters "of the gentlemen," and selected their pigs, sheep, and cattle by the largeness of their bone, because large-boned animals "came," they said, "well to scale." With all their faults, however, with all their short-comings, they were a good honest race, and we wish we had some cultivating proprietors as free from prejudice, and as ready to adopt improvements, as the new school, particularly improvements of a certain class.

But our friend, the yeoman of the days that are gone, and his cider orchard, have drawn us away from the main subject before us—the question of harvest drinks. The abuse of anything is no argument against the use of it. In this matter let there be one rule for all. If all liquors which contain alcohol are bad for the labourer, they must be equally bad for the farmer and the landowner. Let them at the same time be banished the farm-house, and the mansion!

Professor Johnston, in his "Chemistry of Common Life," has put the use of fermented liquors in their proper light. He has treated of the liquors we ferment, as well as the beverage we infuse. He contends against their abuse, but advocates their legitimate use. He points out the beneficial effects, under certain conditions, attending the use even of ardent spirits; and shows that beer is nourishing, as well as stimulating. He gives a statement of the quantity of ardent spirits consumed in the United Kingdom, in 1852, amounting to 25,021,315 gallons, which are consumed in England, Scotland, and Ireland; these quantities being in the relative proportions of 10, 6, and 8. This is a large quantity of ardent spirits, he admits to be consumed by a population of less than thirty millions; but he contends that they do not justify the assumption of Scotland and Ireland being more addicted to drunkenness than England; a charge which, he observes, strange as it may appear, originated in Scotland. Calculating the quantity of alcohol yielded by the malt consumed in England, he shows that it is much greater in England than in Scotland and Ireland; but then it is largely consumed in the form of beer. This beer, he says, feeds and nourishes, as well as exhilarates the English labourer. All which the distiller does not convert into alcohol is lost in the waste as food for man. All which the brewers' wort contains, with the exception of that separated in the fining, remains in the beer.

Sugar and gluten, to the amount of from 4 to 5 per cent. of its weight, exist in the malt liquor, and travelling through the system modify the apparent action of the alcohol with which they are associated. They place malt liquor in the same relations to ardent spirits that cocoa bears to tea and coffee. He shows, moreover, that beer is drugged, so to speak, with hops, the tonic, narcotic, and sedative influence of which modify the intoxicating action of the alcohol. He observes, in another place, that in the ardour of the teetotal crusade against ardent spirits and fermented liquors, statements have been made by over-zealous champions of total abstinence, which are not quite borne out by chemical and physical research. He shows that their effects are to nourish the body, and by the changes which they undergo in the blood to supply a portion of the carbonic acid and watery vapour which are constantly given off by the lungs. They so far supply the place of food—of the fat and starch, for instance, which we usually eat. Secondly, they diminish the absolute amount of matter which we give off from the lungs and the kidnies. They thus lessen, as tea and coffee do, the natural waste of the fat and tissues, and they necessarily diminish in an equal degree the quantity of ordinary food, which is necessary to keep up the weight of the body. In addition to this saving of material, they facilitate and aid digestion. He then adverts to the beneficial effects of the moderate use in old people of weak alcoholic drinks in arresting the daily amount of loss of substance, adding that this in no ways justifies the too great indulgence in fermented liquors of any kind, and that it does not palliate the moral evils to which this excess conduces.

The peculiar dangers of intoxicating liquors arise from their seductiveness, and the all-but-unconquerable strength of the drinking habits which are formed.

Teach our peasantry then, we would say, temperance, not total abstinence. Introduce tea and coffee, if you will, into the hay-field and the harvest field. Do not, however, debar the English labourer of his beer, unless you are prepared at the same time to banish port and sherry from the farm-house, and claret and champagne from the vicarage, the mansion, and the club-house. Let the labourer have his beer, but keep him from the pot-house.

THE ROYAL AGRICULTURAL IMPROVEMENT SOCIETY OF IRELAND.

MEETING AT WATERFORD.

Everybody testifies to the advance of agriculture in the sister-kingdom. Comparatively with what it has been, no country is progressing so rapidly. The movement, moreover, is more or less a general one. There are few districts now, but in which the germ of improvement is at any rate "coming on;" while in many quarters it is developing in an extraordinary and very significant degree. Perhaps the most gratifying fact associated with all this is that the people take an actual pleasure in what they are doing. There is no forcing. At best there is but little interference on the part of the Legislature. It is rather a joint effort of landlord and tenant to do justice to themselves and their country. This adventure so far has been attended with a success that the most sanguine could scarcely have anticipated. So great, indeed, has it been, that it is difficult to define to what it may conduce. In some matters the Irish agriculturist is already becoming a formidable rival to our own. He has had the spirit and judgment to go to the best market for what he wanted, and he has done the best with it. At this moment there are herds of Shorthorns, flocks of Leicesters, and sties of pigs, that are just about as good as any we have on this side of the Channel.

At such a turn, then, in the history of a country, an Agricultural Improvement Society holds a most responsible position. Of all the many public institutions either proposed or carried out, none other has the opportunity of doing so much good for Ireland. It is the very time when the influence of such a body is most required. With its fostering care, the exertions and aspirations of the people may be most materially assisted and encouraged. It stands like the conductor of a band, every member of which is ready in an instant to follow the wave of his baton. It is an evil day, then, when their leader is found not equal to his place. The best of his troop go wrong in watching him, and the more apathetic fall back to do nothing at all. It is almost impossible to imagine how much good or harm a society with such an object may do for a country at such a crisis.

The Royal Agricultural Improvement Society of Ireland is, at any rate, well named. More than this, it is gradually becoming worthy of its title. It is fast losing many of its national characteristics — such as the desire of everybody to tread on the tail of everybody else's coat; the good old practice of turning the Council Meetings into a periodical revival of Donnybrook fair, or of identifying each Annual Meeting with the commission of some monstrous "bull," that shamed the Shorthorn for size, if it did not for quality. It is our pleasant office to record that this meeting at Waterford was not only one of the best supported, but certainly the best *managed* celebration the Society has ever yet known. Let us not care to inquire too particularly to whose credit this may be; sufficient be it to say, that this Irish Agricultural Institution is smoothing down to a well-conducted, really useful organ, that promises to do far more in furthering a good cause than it has ever yet had a fair chance of accomplishing.

There were many signs of this better understanding and proportionate progression at Waterford last week. Useless classes and unpopular premiums, that for some time back had little but routine to recommend them, were struck out, and new offers and classifications arranged in their stead. As we shall have to show hereafter, these were so judiciously studied as to result, in one particular instance, in by far the best show of a certain sort of stock we ever remember having seen! At the same time the "old-established" favourites were by no means neglected. There were Shorthorn cattle, Leicester and Cotswold sheep, Berkshire and Cumberland pigs, all with numerous entries, and many, of the very best quality. How directly this very enumeration speaks to the development of agriculture in Ireland! How it assures us of the overthrow of prejudice and of ignorance, with their blind adhesion to their own idols! Ireland has come to us for her stock, and already is she reaping her reward. Our dealers and agents who want good stock are going to Ireland for it. It is well known at this time that some of the best shorthorns are being bred in the sister-kingdom.

From a variety of causes, however, the general show of short-horns at Waterford was not equal to what we have seen in Ireland. This was more particularly the case with the aged bulls, which were certainly not up to their average strength. Amongst other reasons for this, Lord Monck, a very successful breeder, did not exhibit, having lately had a suspicion of some kind of distemper in his herd. Then the famous "John O'Grot," though entered, was not sent, it being thought hardly judicious to risk a voyage with him so soon after his recent appearances in public. Mr. Douglas, again, did not send his young bull, but he made ample amends for this omission with the sister, the now renowned "Rose of Athelstane," which just saved the Society their challenge cup, beating Mr. Campion's Jenny, the winner of the two previous years, as well as the Maid of Kilbogget, and Mr. Turner's couple of beautiful heifers. There is no question but "the Rose" was the best animal in the yard, and Mr. Douglas supported her with two more very worthy of her and of him. Indeed, the whole show of cows and heifers made ample amends for any falling-off amongst the male animals. They had, at least a majority of them, all the great points of a shorthorn—symmetry, quality, and good pedigrees. We should be afraid to price "The Rose of Athelstane;" but Mr. Douglas is asking a thousand guineas for her two-year-old brother, "Sir James the Rose," and there is little doubt but his customers will bid up to him.

It is impossible, this week at least, to enter on any analysis of this or the "other classes." The latter brought but very short entries. They included some rather coarse Devons, a few Angus and Ayrshires, and a stronger lot of Kerrys. But even the Kerrys are said to be getting scarce in their own country, and, if you want a good pure-bred one now, the chances are you will have to go to Bantry for him. The fact is, there is not enough of the handsome little Kerry for the days we live in. The "Extra" Tenant-Farmer Classes were, as usual, a complete failure. A man whose rental is limited to a hundred a year is not likely to have much stock he would care about sending into a show-yard. The retention of these premiums on the list is but doubtful policy.

The show of Leicester rams of all ages was very good, and "the best sheep in the yard" was amongst them. The Cotswolds, too, are on the increase, with Mr. Beale Browne still the only importer. The success of this gentleman, the prizes he takes and the prices he makes, might induce others to follow him; but his ewes are truly wonderful. The entry of Southdowns and Cheviots was again limited, and with Mr. Roberts and the Marquis of Conyngham as the best men. Mr. Roberts' sheep are either directly imported or bred from Mr. Henry Overman's flock; and though Lord Conyngham unfortunately meets with but little opposition, his Cheviots would be worthy of distinction any where. His lordship for the second year in succession took all the prizes in this section.

There was a very excellent exhibition of pigs, mostly of three well-known varieties. These were the Berkshire, always shown to advantage in Ireland; the great Yorkshire white pig; and the smaller Cumberland of the same colour. Again it is pleasing to notice how readily our Irish friends have disowned their long-snouted "familiar," so associated with Erin's cottages and homesteads.

A Suffolk stallion, bred by Mr. Kersey, of Farminston, Suffolk, and sold for three hundred, took the first prize for cart-horses. He was liked none the worse here for being a little darker in colour than what the fancy runs on. A Clydesdale horse took the second, and the entry was made up of all sorts and sizes. Three of the young stallions "of any breed for agricultural purposes" were got by race-horses out of half-bred mares, two by Great Heart and one by Safeguard! With square tails, blood heads, and clean legs, they looked a deal more like answering to the cheer of a huntsman than starting for another bout at the "Gee-whut!" of a ploughman.

But, if at best your Irishman has only a faint idea of a cart-horse, he has a tolerably good notion of him "for other purposes." Year after year have we had to ponder on this, and to wonder why there were no premiums for hunter stallions and riding horses. At Waterford, mainly as we believe through the exertions of the Secretary, Captain Croker, a series of special premiums were offered with this object. At no cost to the Society, fifty pounds and a gold medal was to be given to "the best weight-carrying thorough-bred stallion;" thirty and a silver medal to the second best; with twenty and a bronze medal to the third. There were similar premiums for hunting mares. This was the first year of the experiment, and it resulted in the best show of thorough-bred horses we ever saw brought together on such an occasion. Let us name a few of the thirty entered: Stotforth, The Knight of Gwynne, Thistle-whipper, War Hawk, Heapy, Glentilt, Barbarian, Lord George, Red Hart, Great Heart, Chit Chat, Dey of Algiers, Kilmoyler, and Cattonite. We have only to regret the award will not tell equally well. The judges, all Englishmen, gave in their original decree, pronouncing Red Hart entitled to the first premium, Knight of Gwynne to the second, and Barbarian to the third. Then, however, the veterinary surgeon, Mr. Farrell, steps in, and at once annuls this. He declares Red Hart and Knight of Gwynne to be unsound, the former from ringbone, and the latter as a roarer. The judges have to go over their work again, when they place the Dey of Algiers first, Barbarian second, and another of Lord Waterford's horses third. It is almost needless to say that popular opinion went almost entirely with the first award, and none were more dissatisfied than the judges themselves. In evidence of this we may cite the following note or protest which they handed in previous to leaving Waterford:—

"Weight-carrying Hunters and Mares: The Judges beg to state they have had much difficulty in deciding in these two classes; as the best horses have been pronounced unsound by the veterinary surgeon, and so excluded from taking any of the prizes.—Signed Charles Garfit, on behalf of the Judges."

Lord Besborough and Mr. Gregory, who were at the meeting, testified that Red Hart's "ring-bone" was the result of an accident in running, when he put his foot in a hole and broke down. A very serious question is raised by this proceeding, that the national societies cannot too soon bring to a hearing and an adjustment—Did not the veterinary surgeon exceed the duties required of him? Is every stallion to be pronounced to be—hereditary—unsound, that has broken down, or turned roarer? And if so, how many sound horses have we amongst us? The same sort of thing our readers may remember as having occurred at the Louth show. We repeat, the sooner the point is entertained the better; as we know of nothing so likely to interfere with one of the most interesting and improving features in the meetings of agricultural societies.

We leave to our own special correspondent the duty of dealing with the implement department of the Waterford show. It was well supported by many of our English manufacturers. The Waterford Meeting went well all ways but one, and that exception was the dinner. It was but badly done to begin with—turtle and the best of everything for the Lord-Lieutenant and his party, and very short-commons for the "&c., &c.," as the reporters say. Then one gentleman came to make a noise, and would make it; and half the people went away before it was half over, not very highly delighted with their evening's amusement. Lord Waterford made a very good chairman; and Lord Carlisle delivered an elaborate, though not a telling, speech on agricultural statistics. With all due deference, we take these dry figures and facts to be a little out of his Excellency's line—if not, indeed, altogether too tedious for such an occasion.

TRIAL OF IMPLEMENTS.

After the usual inspection of the implements, and the selection by the judges of those designed for trial, it was arranged to take the ploughs first. Six were finally selected and sent to the trial field at Kilbany. They were exhibited respectively by Messrs. A. and T. Fry, of Bristol, Graham of Dublin, Gray of Belfast, Law of Glasgow, Sheridan of Dublin, and Messrs. Allen and Mitchell, Dublin. Messrs. Bentall's and Busby's ploughs were also accepted for trial: the former did not arrive in the clover lea field in time for trial, and Busby's did not arrive in the Show Yard till after the trials were concluded, which was so far unfortunate for Mr. Busby, as, from its general form and clever adaptation of the mould-turner, it did fair to take the prize. The implement-makers having arranged to put the working of their ploughs into the hands of the Marquis of Waterford's ploughmen, and the judges consenting, the trial commenced, it being arranged that each plough was to make four bouts, with furrows 6 inches in depth and 9½ to 10 inches in width, and the dynamometer (Howard's) was to be applied on the fourth bout to test the draught. Messrs. Fry's plough was first tried. The work was well performed, the furrow laid at a good inclination, and it made a fair and pretty level furrow-sole. The construction of the plough is faulty in some respects. The mould-turner is too short, and not of the precise inclination now so well established; and the draft irons being attached to each end of the hake, they occasionally pressed upon the wheel. The dynamometer gave an even indication, the extremes being 3 cwt. to 5½ cwt. Messrs. Graham's plough was next tried. The work was fairly laid, but too upright; the furrow-sole tolerably even, but much broken up and too wide—in fact, thrusting the furrow-slice too far, and of course causing greater friction, and consequently a greater draught. The mould-turner is short and too wide, and the established incline is not brought out, as is seen in Ransomes', Howard's, Busby's, &c., &c. We say "*established,*" because the gradual incline of these mould-turners have stood the test of many trials, and fully proved their lightness of draught. Mr. Graham's plough gave a more unequal indication of the dynamometer, and the extremes were 3½ cwt. to 6 cwt. Messrs. Allen and Mitchell's plough was next tried, but at once showed a bad construction, worked very indifferently, and was ultimately withdrawn: the inclination of the mould-turner was manifestly bad, particularly in the breast, which is highly raised and breaks the furrow before it begins to turn it off. Mr. Robert Gray's plough came next. It makes a large and good furrow, but too flat, and the furrow-sole was much broken up, scarcely any portion being actually cut by the share. The furrow-slice was also much broken, and very much pressed aside, leaving a large broad furrow-sole. The dynamometer at once showed the extent of the friction, and the indicator gave the extremes of 4 to 6½ cwt.—mould-turner very short, and a great overlap. Mr. R. Law's plough was next tried, and soon exhibited marks of decided superiority: the work was clean cut, and well laid at the proper incline, leaving both a good furrow and furrow-sole. In this plough was shown much of the true incline, mould-turner being after the best pattern—it is 3 feet 6 inches long, with a share 11½ inches to point; from point to draught-hake, 1 foot 10 inches; length of plough from frame, 3 feet 10 inches, and 7 feet 3 inches to point of stilt. The indications of dynamometer gave a very even draught, the extremes being from 3 to 5 cwt., and but twice reaching 5 cwt. in 31 tellings-off. Mr. Sheridan's was next tried: this plough at the given depth could not lay its work well, being too upright, and the draught gave the extremes to 7 cwt. Mr. Maher also tried a plough, intended more as a double moulding plough, but with one mould-turner; it did tolerably in loose work.

On Saturday the trial of Messrs. Moore and Clark's American mowing machine took place in a plot of grass by no means adapted to show its capabilities; however, it charged the rough grass and "old fog" (like cutting through wool) in a workmanlike manner, and made tolerable work. The trial was not considered a fair one; but as the grass was required for the tedding machines, it was continued in work a considerable time.

The tedding machines were next tried.—Messrs. Smith and Ashby's, and Nicholson's (shown by Richmond and Chandler). This was the closest trial of the meeting, and was with difficulty decided. Messrs. Smith and Ashby brought forward their old patent machine with an improvement on the tooth, not the one shown by them at Salisbury. After many severe tests, the palm was awarded to this machine; the other highly commended.

The horse rakes were next tried, and consisted of those shown by Richmond and Chandler, Garrett, Smith and Ashby, Fisher, Marychurch, Allen and Mitchell, Gray and Heat, and Gibbons and Co. The trial was not a satisfactory one, as it was all grass, no hay; but sufficient was done to enable the judges to decide in favour of Richmond and Chandler's rake (Williams' pattern). Messrs. Marychurch's rake was highly commended; Mr. Garrett's commended.

On Monday Dray and Co.'s reaper underwent a very satisfactory trial in a field of ripe wheat, greatly incommoded by grass and weeds. The work was well and closely cut, and so quickly as to keep about a dozen women (capital binders) to bind after it. Grubbers and ploughs followed: the ploughs merely to show their adaptation to loose work or general ploughing, and with precisely the same result; and Mr. Law took the prize. The grubbers, of which there were many (Messrs. Bentall's, Graham's, Gray's, Allen and Mitchell's, Law's, Milward and Sheridan's, and one or two others) had a very unsatisfactory trial; but as grubbers, and not for general cultivation, the prize was given to Mr. Gray, Mr. Graham's being highly commended. The judges then proceeded to the clover-field, to try the mowing-machines of Messrs. Moore and Clarke, and Messrs. Dray and Co. The clover was in good order, and a most satisfactory trial took place, both machines doing admirably. The superiority, however, lay with the American, and received the prize—Messrs. Dray's being highly, if not specially commended. This concluded the field trials. On the following day the judges were occupied in the yard; as no more time could be given to the field trials, only one class of judges being engaged, whereas to make proper trials three classes might have found full occupation. The only trial which took place on that day was a laughable one of churns, of which eight were put in competition—*i. e.*, Moore and Clark's Yankee Hydrothermal American; Standing's oval upright, worked by two dashers turning inside; Shanahan's barrel old-fashioned pattern, turned round on its own frame; Richmond and Chandler's, with double dashers; Fisher's oblong, worked by lever-dasher; Gray's—the dashers are two perforated boards with open ends, worked from either end of churn, and turning opposite ways; Shaw's upright round churn, with plunging dasher worked by wheels; and Allen and Mitchell's, worked by a large fly-wheel motion lifting an upright plunging dasher, upon the principle of beam-and-scale motion. These were all supplied with milk (not cream, which could not be obtained readily), according to the request or approval of the exhibiters. All being in readiness, time was called, and it was truly ludicrous to see so many active fellows at work in right good earnest upon such a business, some taking three, others two to one each, according to size. The Yankee *cheered* first, having obtained butter in ten minutes; but the subsequent "gathering" was proportionately longer: he obtained 1lb. of butter from 3 gallons of milk. Shanahan next cried "Butter!" in 19 minutes, but he was a considerable time "gathering:" he obtained 3lbs. 12oz. from 10 gallons of milk. Standing next called "Butter!" 20½ minutes, but he was 40 mins. before it "gathered:" he obtained 3lbs. 6ozs. from 12 gallons of milk. Gray next announced butter, 21½ minutes, and soon "gathered:" he obtained 3¼lbs. from 12 gallons milk. Fisher now said "I have butter;" but it turned out he had churned butter some time previously, but it took him 32½ minutes to complete his task from the commencement: his churn was very small: he obtained ¼lb. from 1½ gallons milk. Allen and Mitchell next cried "Butter!" and it was "gathered" within 30 minutes; they obtained 3¾lbs. from 11 gallons of milk. Shaw kept on for 1 hour and 15 minutes; but as no prospect of butter appeared, he withdrew. This churn dasher moved too quickly. The prize was awarded to Shanahan's barrel churn.

PRIZES FOR LIVE STOCK.

SHORTHORNED CATTLE.

JUDGES.—Thomas Barnes, Moynalty, county Meath.
John Collie, Paulethie, Forfarshire.
John Unthank, Netherscales, Penrith.

Bulls calved on or after the 1st of January, 1852, and previous to the 1st of January, 1855.

First prize of £10 to the Marquess of Waterford, Curraghmore, Portlaw (Tyro).

Second prize of £5 to Sir R. Paul, Bart., Ballyglan, county Waterford (Acrobat).

Bulls calved in the year 1855.

First prize of £20 to Mr. John Hunter, Loughmore Cottage, Templemore (Lord Garles).

Second prize of £5 to Lord Talbot de Malahide, Malahide Castle (Priam).

Highly commended.—Mr. J. Richardson's bull (Carlisle).

Bulls calved on or after the 1st of January, 1856.

First prize of £10 to Mr. John Christy, Fort Union, county Adare (Foundation).

Second prize of £5 to Mr. Richard Welsted, Ballywalter, Castletown Roche (Napoleon).

Highly commended.—Mr. R. W. Reynell's bull (Lord Cosmo).

Cows in-calf or in-milk, of any age.

First prize of £10 to Mr. Rowland Campion, Old Town, Shanballymore (Jenny).

Second prize of £5 to Sir Robert Paul, Bart., Ballyglan, county Waterford (Evelyn).

Commended.—Sir R. Paul's cow (Lady Woodbank).

Heifers in-calf or in-milk, calved in 1854.

First prize of £10 to Mr. James Douglas, Athelstaneford, East Lothian (Rose of Athelstane).

Second prize of £5 to Mr. J. J. Turner, Kilcullen (Lily Grey).

Highly commended.—Mr. Turner's heifer (Ace of Hearts), and Captain Ball's heifer (Gracious).

The Purcell Challenge Cup of £100 (founded by the late Peter Purcell, for the best animal in the neat cattle classes, possessing most merit of its kind in the estimation of the Judges), to Mr. James Douglas (Rose of Athelstane).

Heifers in-calf or in-milk, calved in the year 1855.

First prize of £10 to Mr. J. J. Turner (Queen of Trumps).

Second prize of £5 to Mr. Rowland Campion (Rosalie).

Highly commended. — The Earl of Clancarty's heifer (Patricia).

Heifers calved on or after the 1st January, 1856.

First prize of £10 to Mr. James Douglas (Third Queen of Trumps).

Second prize of £5 to Mr. J. Barcroft, Cabinteely (Maid of Killiogget).

Highly commended.—Mr. J. Douglas's heifer (Venus de Medici), and Mr. R. Campion's heifer (Mannelita).

For the best of all the prize bulls exhibited at the Show, the gold medal to Mr. J. Christie, Fort Union, county Adare (Foundation).

For the best of all the prize cows or heifers exhibited at the Show, the gold medal to Mr. J. Douglas (Rose of Athelstane).

OTHER BREEDS.

JUDGES.—Henry Croker, Drumkeen, county Limerick.
Samuel Garratt, Arch Hall, county Navan.
Robert White, Goolden, county Tipperary.

Devon bulls, calved on or after the 1st January, 1852.

The prize of £5 to the Earl of Charlemont, Marino, Dublin, (Young Chieftain).

Polled Angus or Galloway bulls, calved on or after the 1st of January, 1852.

The prize of £5 to Lord Talbot de Malahide, Malahide Castle, (Monk).

Ayrshire bulls, calved on or after the 1st Jan., 1852.

The prize of £5 to Mr. N. W. Roche, Fermoy, county Cork.

West Highland bulls, calved on or after the 1st Jan., 1852.

The prize of £4 to Mr. W. S. Trench, Cardtown, Mountrath.

Kerry bulls, calved on or after 1st Jan.

First price of £3 to Mr. W. Owen, Blessington, county Wicklow (Dan).

Highly commended.—The Earl of Charlemont's bull (Knight of Glyn).

Devon cows in-calf or in-milk, of any age.

The prize of £4 to the Earl of Charlemont, for cow in-calf (Beauty).

Devon heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £3 to the Earl of Charlemont for heifer in-calf (Young Rose).

Devon heifers, calved on or after 1st Jan., 1856.

The prize of £3 to the Earl of Charlemont (Julia).

Polled Angus or Galloway cows it-calf or in-milk, of any age.

The prize of £4 to Lord Talbot de Malahide (Lily)

Commended.—Lord Talbot's cow.

Polled Angus or Galloway heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £3 to Lord Talbot de Malahide (Fanny).

Commended.—Lord Talbot's heifer (Maid of Angus),

Polled Angus or Galloway heifers, calved on or after the 1st Jan., 1856.

The prize of £3 to Lord Talbot de Malahide (Rose).

Ayrshire cows in-calf or in-milk, of any age.

The prize of £4 to Mr. N. W. Roche, M.D., Fermoy, county Cork.

Ayrshire heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £3 to Mr. N. W. Roche.

Ayrshire heifers, calved on or after the 1st Jan., 1856.

The prize of £3 to Mr. N. W Roche.

West Highland cows in-calf or in-milk, of any age.

The prize of £3 to Messrs. Wilson and Law, Screggan House, Tullamore (Lady M'Claren).

West Highland heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £2 to Mr. W. S. Trench, Cardtown, Mountrath.

West Highland heifers, calved on or after the 1st Jan., 1856.

The prize of £2 to Mr. Trench.

Kerry cows in-calf or in-milk, of any age.

The prize of £3 to Sir Edward M'Donnell, New Haggard, Lusk.

Commended.—Mr. Francis Bland's cow (Alice Hawthorn).

Kerry heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £2 to Sir E. M'Donnell.

Commended.—The Knight of Kerry's heifer (Valentia).

Best of all the prize bulls exhibited at the show.

The Gold Medal to Mr. John Christy, Fort Union. Adair, for short-horned roan bull (Foundation) calved April 1st, 1856.

Best of all the prize cows or heifers exhibited at the show.

Gold medal to Mr. James Douglas, Athelstaneford, Drem, East Lothian, for a short-horned roan heifer (Rose of Athelstane), calved Dec. 25, 1854; produced a live calf Feb. 10, 1857.

HORSES.

JUDGES.—P. Sarsfield, Comyn, county Galway.
R. G. Talbot, Ballinclea House, Dalkey.
W. Torr, Aylesby Manor, Grimsby.

Stallions of any breed for Agricultural Purposes, foaled on or after the 1st Jan., 1850, and previous to the 1st Jan., 1855.

First prize of £30 to William Joyce, Abbey Farm, Waterford (Albert).

Second prize of £10 to James Corman, Cremore, Kilmuckridge, Gorey (Comet).

Highly commended.—Wellesley Prendergast's Suffolk chesnut cart stallion (Czar).

Stallions of any breed for Agricultural Purposes, foaled on or after the 1st of January, 1857.

First prize of £15 to Andrew Chalmers, Miner's Hill, Dalkey (Sovereign).

Second prize of £10 to John Dickson, Gortnamona, Tullamore (Milton).

The best stallion in the above sections, the medal to William Joyce for his Suffolk cart stallion (Albert).

Draught mares in foal, or with a foal at foot, or having reared a foal in the year 1857.

First prize of £10 to David H. Sherrard, Thorndale, Drumcondra, county Dublin (Jessie).

Second prize of £5 to Silvester Rate, Rathmoyle, Edenderry (Bay Bell).

Draught fillies foaled in the year 1854. *No merit.*

Draught fillies foaled on or after the 1st January, 1855.

First prize of £5 to Silvester Rait, Rathmoyle, Edenderry (Jess).

Second prize of £3 to Andrew Chalmer, Miner's Hill, Dalkey (Nell).

Draught fillies foaled on or after the 1st Jan., 1856. *No merit.*

SPECIAL PRIZES FOR ANY PURE AND DISTINCT FOREIGN BREED SUITABLE FOR AGRICULTURAL PURPOSES OR HEAVY DRAUGHT.

JUDGES.—P. S. Congreve.
R. G. Talbot, Ballinclea House, Dalkey.
W. Torr, Aylesby Manor, Grimsby.

Stallions of any age: 1st prize 500 francs; 2nd prize 300 francs. *No competition.*

Mares of any age: 1st prize of 400 francs to Major Quentin (French mare, Rosa Bonheur); 2nd prize of 300 francs to Major Quentin (French mare, Dapple).

A Silver Medal to be added to the winners of the First Prizes, and a Bronze Medal to the winners of the Second Prizes.

SPECIAL HORSE PRIZES (HUNTERS).

JUDGES.—C. Garfitt, Tabbey Old Hall, Cheshire.
C. Nanby, Barnoldby, Lincoln.
J. Scholfield, Howden, Yorkshire.

Weight-carrying thorough-bred stallions.

First prize of £50 and the Gold Medal to George Thompson, Ballingarry, Shinrone.

Second prize of £30 and the Silver Medal to the Marquis of Waterford, Curraghmore, Portlaw (Barbarian).

Third prize of £20 and the Bronze Medal to the Marquis of Waterford, Curraghmore, Portlaw (Lord George).

Weight-carrying hunter brood mares, having a foal at foot or being in foal.

First prize of £20 and the Silver Medal to W. M. Glascott, Alderton, Priest Haggard, New Ross (Lady Jane).

Second prize of £10 and the Bronze Medal to Mr. Wm. Quinn, Loughloher Castle, Cahir (Attraction.)

SHEEP.

LEICESTERS.

JUDGES.—Luke Beauman, Lincolnshire.
Jno. Clarke, Long Sutton, Lincolnshire.
Jno. Hannam, Kirk Deighton, Wetherby.

Pure-bred Leicester Shearling Rams.

First prize of 10*l.* to Mr. C. J. Gage,

Second prize of 5*l.* to Sir F. W. Heygate.

Pure Leicester Rams over one shear.

First prize of 10*l.* to Mr. H. L. Prentice, Caledon.

Second prize of 5*l.* to Mr. C. J. Gage.

Highly commended.—Rev. E. Hamilton's ram.

Pens of Three pure Leicester Shearling Ewes.

First prize of 10*l.* to Sir F. W. Heygate.

Second prize of 5*l.* to Mr. C. J. Gage.

Pens of Three pure Leicester Ewes, over one shear, having reared their own lambs in 1856.

First prize of 10*l.* to Mr. C. J. Gage.

Second prize of 5*l.* to Mr. H. L. Prentice.

EXTRA STOCK.

Commended.—Mr. T. R. Browne's two black-faced rams.

OTHER LONG-WOOLLED SHEEP, NOT QUALIFIED TO COMPETE AS LEICESTERS.

Shearling Rams.

First prize of 10*l.* to Mr. T. Beale Browne, Hampden, Andoversford (Cotswold shearling ram).

Second prize of 5*l.* to Mr. Silvester Rait, Rathmoyle, Edenderry (shearling long-woolled ram).

Highly commended.—Mr. T. Beale Brown's Cotswold shearling ram.

Commended.—Mr. William H. Carroll's shearling long-woolled ram; and Mr. N. W. Roche's two-shear long-woolled ram.

Two-shear Rams.

First prize of 8*l.* to Mr. William H. Carroll, Tulla House, Nenagh (long-woolled ram).

Second prize of 4*l.* to Mr. Thos. Garde, Ballinacurra House, Middleton (two-shear Leicester rams).

Rams of any age, not exceeding six years old.

First prize of 5*l.* to Mr. Silvester Rait (four-shear long-woolled rams).

Second prize of 3*l.* (no competition).

Pens of Five-shearling Ewes.

First prize of 5*l.* to Mr. George White West, Ardenode, Brannoxtown, Newbridge (two-shear long-woolled ewes).

Second prize of 3*l.* to Mr. T. Beale Browne (Cotswold ewes of different ages).

Pens of five Ewes, not exceeding five years old.

First prize of 3*l.* to Mr. William Baker, Ballinover, Waterford (two-shear long-woolled ewes).

Second prize of 3*l.* to Mr. Wm. Stuart French, Cardtown, Mountrath (two shear Cheviot rams).

CHEVIOTS OR ANY OTHER MOUNTAIN BREED.

Rams of any age, not exceeding five years old.

First prize of 3*l.* to the Marquis of Conyngham, Slane Castle, Slane (two-shear Cheviot rams).

Second prize of 2*l.* to Mr. William Stewart Trench, Cardtown, Mountrath (shearling Cheviot ewes).

Pens of five shearling Ewes.

First prize of 3*l.* to the Marquis of Conyngham (shearling ewes).

Second prize of 2*l.* to the Marquis of Conyngham (shearling Cheviot ewes).

Pens of five Ewes, not exceeding five years old.

First prize of 3*l.* to Mr. Richard Lloyd, Meldrum, Cashel (three-shear Leicester rams).

Second prize of 2*l.* to the Marquis of Conyngham (two-shear Cheviot ewes).

SWINE.

BLACK.

JUDGES.—Henry Battersby, Harkfield, Mullingar.
Caleb Young, Traversol, Nenagh.
William Torr, Aylesby, Great Grimsby.

Boars under 18 months old.

First prize of £5 to Mr. William Joyce, Abbey Farm, Waterford.

Second prize of £3 to the Marquis of Waterford, Curraghmore.

Commended.—The Marquis of Waterford's pure Berkshire boar.

Boars over 18 months and under 36 months old.

First prize of £4 to Mr. William Joyce (The Berkshire Champion).

Second prize of £2 to Lord Carew, Woodstown, Waterford.

Boars in the above sections.

The prize medal to Mr. William Joyce, Abbey Farm, Waterford (The Berkshire Champion).

To the breeder of ditto, the medal.

Breeding sows under 18 months old.

First prize of £4 to Sir Robert Paul, Bart., Ballyglan, Waterford (My Mary Ann).

Second prize of £2 to Miss Fitzgerald, Kilmarnock, Ballybrack, county Dublin (Madeline).

Commended.—Mr. William Joyce's sow (Pollyhewer).

Breeding sows over 18 months old.

First prize of £3 to the Marquis of Waterford.

Second prize of £2 to Mr. J. P. Tynte, Tynte Park, Dunlavin.

Commended.—Mr. Paul's Berkshire sow.

Lots of three breeding sow pigs of the same litter, not more than 10 months old.

First prize of £3 to Mr. William Joyce.

Second prize of £2 to the Marquis of Waterford.

Commended.—Mr. William Joyce's Berkshire sows.

WHITE.

Boars under 18 months old.

First prize of £5 to Mr. John H. Geart, Cappagh, Finglas, county Dublin (Young Sampson).

Second prize of £3 to the Earl of Bessborough, Bessborough Park.

Commended.—Major Quentin's boar (Goliah).

Boars over 18 months and under 36 months old.

First prize of £4 to Mr. William Boyle (Albert), Model Farm, Glasnevin.

Second prize of £2 to the Duke of Leinster, Carton, Maynooth.

Breeding sows under 18 months old.

First prize of £4 to Mr. John H. Peart, Cappagh, Finglas, county Dublin (Young Sampson).

The medal to breeder of ditto.

Second prize of £2 to Mr. John H. Peart, Cappagh, Finglas, county Dublin.

Breeding sows over 18 months old.

First prize of £3 to His Excellency the Earl of Carlisle, Castle Howard, Yorkshire.

Second prize of £2 to Sir Robert Paul, Bart., Ballyglan, Waterford.

Lots of three breeding sow pigs of the same litter, not more than 10 months old.

First prize £3 to Mr. William Boyle, Albert Model Farm, Glasnevin.

Second prize of £2 (No merit).

EXTRA PREMIUMS.

To be competed for by *bona fide* tenant farmers of Ireland not paying more than £100 a-year rent.

Best breeding sows over 18 months old.

The prize of £3 to Mr. Mathias Harford, Moate, county Westmeath; for white Yorkshire sow, with litter.

Best breeding sow under 18 months old.

The prize of £2 to Mr. Samuel Kent, Ballycanvan, Waterford, for black Berkshire sow in young; pigged July 4, 1856.

IMPLEMENTS.

JUDGES.—John Clarke, Long Sutton, Lincolnshire.
John Hannam, Kirk Deighton, Wetherby.
Robert C. Wade, Clonabraney, county Meath.

For Hussey's reaping machine—25*l.* to Messrs. W. Dray and Co., Swan-lane, London.

There was no competition for the second-best reaping machine.

For patent hay-making machine, with double action and reverse motion—5*l.* to Smith and Ashby, Stamford, Lincolnshire.

Highly commended.—Richmond and Chandler's improved hay machine.

For patent horse rake—5*l.* to Richmond and Chandler, Salford, Manchester.

Highly commended.—J. Marychurch and Son's patent six-foot self-acting horse rake.

Commended.—R. Garrett and Son's improved patent lever iron drag rake.

For plough for general purposes—5*l.* to Robert Law, Shettleton, Glasgow.

Highly commended.—William Graham's improved wrought-iron plough for a pair of horses; and Messrs. A. and T. Fry's registered press plough.

For the best instrument for breaking up the soil—5*l.* to Mr. E. H. Bentall, Heybridge, Essex.

For heavy harrow—3*l.* to E. H. Bentall, Heybridge.

Commended.—Henry Sheridan and Co.'s improved two-horse harrow.

For light harrow—3*l.* 15s. to E. H. Bentall.

For three-horse field grubber—5*l.* to Robert Gray, Belfast.

Commended. — William Graham's improved wrought-iron four-horse grubber or pulverizer.

For the best drill grubber—3*l.* to William Graham, Smithfield, Dublin.

Highly commended.—Robert Gray's parallel drill grubber; A. and J. Fry's drill horse-hoe, and iron horse-hoe for green crops, for the ridge or flat.

For improved revolving horse-hoe and turnip thinner, for hoeing and thinning turnips on either flat or ridge lands—5*l.* to R. Garrett and Sons, Saxmundham, Suffolk.

For Suffolk corn and seed drill, adapted for drilling every description of grain or root crops—5*l.* to R. Garrett and Sons.

For improved steerage corn drill—5*l.* to W. L. Fisher, Hapston.

For the best machine for distributing portable manure broadcast—5*l.* to R. Garrett and Sons.

For the best and least expensive liquid manure carriage and distributor—5*l.* to Hart, Gibbons, and Gibbons, Wantage, Berks.

Highly commended.—Allen and Mitchell's improved liquid manure cart.

For the best machine for sowing grass and clover broadcast—5*l.* to A. and T. Fry, Bristol.

For the best farm cart—5*l.* to Richmond and Chandler, for Busby's agricultural cart.

Highly commended.—J. D. Mitchell's farm cart; Dawson A. Milward's tumbling cart for general purposes; Allen and Mitchell's improved farm cart.

For the best set of hand implements for the farm—3*l.* to John Edmundson, Dame-street, Dublin.

For the best set of drainage tools—3*l.* to John Edmundson.

For best set of farm harness, and most economical, with plain buckles—3*l.* to Hamilton Willis, Glencairn, Lismore.

For 10 cwt. weighing machine, without loose weights—5*l.* to Messrs. James Malcolm, London.

For the best assorment or collection of field gates—3*l.* to Hernulewics, Man, and Co., Belfast.

Highly commended.—St. Pancras Iron Works Company's stand.

For the best churn—5*l.* to Michael Shanahan, Clonea, Carrick-on-Suir.

Highly commended.—Moore and Clarke's Yankee Hydrothermal churn.

For the best general collection of implements, £20 to R. Garrett & Sons.

For the second best general collection of implements, prize of £10 to Richmond & Chandler.

Commended.—H. Sheridan & Co.'s, Dublin.

For the best mowing machine suitable for cutting meadow grass, £20 to B. Moore and Clark, 133, High Holborn, London.

Highly commended. — William Dray & Co.'s mowing machine.

VERY HIGHLY COMMENDED FOR MEDAL.

Messrs. Garretts' combined straw thrashing and dressing apparatus; Garretts' prize portable steam engine of eight-horse power, and prize combined portable thrashing and finishing dressing machine.

Thomas Kennan & Co.'s collection of tools.

W. Forshaw's bone mill, and four-horse power bone cutting and rasping mill.

St. Pancras' Iron Company's stable fittings, and a full-sized model of a stall fitted up to show the patent manager, invented by Professor Varnell, of the Royal Veterinary College.

W. Cambridge's steam thrashing machine for small occupations, four-horse power portable steam-engine, and four-horse power portable thrashing machine.

EXTRA COMMENDED.

Richmond & Chandler's new chaff-cutters for small occupations.

Bentall's cake crusher and oil-cake mill.

Phillips' weed extirpator, Phillips' patent poppy and weed extirpator, and lever harrow and land fertilizer, exhibited by James Woods, Stowmarket.

Richard Perrott's portable three-horse power enclosed grazing machine, and George Perrott's patent portable two-horse thrashing machine, mounted for travelling.

Thomas W. Condon's two-horse thrashing machine and straw-shaker.

James' root-weighing machine, for potatoes and other root crops in the field.

THE CLEVELAND SOCIETY'S CATTLE SHOW AT MIDDLESBRO'.

The Cleveland Agricultural Society had a two days' show at Middlesbro', this year, viz., on the 13th and 14th Aug. The following were the parties who obtained prizes for horses:—

JUDGES.

Cleveland Bay, Coach, and Draught Horses.

Mr. Richard Hodgson, Langton Grange, Northallerton; Mr. Thomas Stamper, Falsgrave, Scarbro'; and Mr. William Earle, Uckerby Grange, Catterick.

Hunters and Roadsters.

Mr. Joseph Atkinson, Roseden, Wooler; Mr. Robert Harrison, Lindrick, Ripon; and Mr. John Preston, Sutton-on-Derwent, York.

HORSES.

Cleveland Bays.

Best brood mare £5, and the society's silver medal, to Mr. John Dodsworth, Seamer.

Second £2, to Mr. Robert Easby, Ormesby.

Colt foal £2, to Mr. John Dodsworth, Seamer.

Filly foal £2, to Mr. T. J. Peart, Great Ayrton.

Yearling filly £2, to Mr. John Dodsworth.

Two-year-old filly £2, to Mr. Parrington.

Three-year-old filly £2, to Mr. Christopher White, Whitby.

Coach Horses.

Best brood mare £5, to Mr. J. Jackson, Lackenby, Redcar.

Second, £2, to Mr. Thomas Rickinson, Seamer.

Coaching foal, colt, or filly £2, to Mr. J. Jackson, Lackenby.

Yearling colt £2, to Mr. Robert Kay, Portrack.

Two-year-old coaching colt £2, to Mr. J. G. Grace, Stockburn, Darlington.

Three-year-old coaching gelding £2, to Mr. John Robinson, Rudby.

Coaching filly, not more than three years old £2, to Mr. John Reed, Park Hill, Coxhoe.

Hunters.

Best brood mare £5, to Mr. John Mewburn, Fellbrigs House, Redcar.

Second £2, to Mr. Robt. Mewburn, Ingleby Barwick.

Hunting foal, colt or filly £2, to Mr. R. Mewburn, Ingleby Barwick.

Two-year-old hunting gelding £2, to Mr. T. Parrington, Lazenby.

Two-year-old hunting filly £2, to Mr. Nathaniel Stonehouse, Skelton Mill.

Three-year-old hunting colt £2, to Mr. J. B. Booth, Killerby Hall, Catterick.

Three-year-old hunting filly £2, to Mr. W. Robinson, Windy Hill, Rudby.

Four-year-old hunting colt £2, to Mr. J. T. Robinson, Leckby, Topcliffe.

Four-year-old hunting filly £2, to Mr. R. King, Gisbro'.

Roadsters.

Best brood mare £3, to H. W. F. Bolckow, Esq., Marton Hall.

Second £1, to Mr. J. Jackson, Lackenby.

Roadster foal £2, to Mr. Thos. Wood, Skelton.

Roadster gelding not more than five years old £2, to Mr. J. Jackson, Lackenby.

Roadster filly not more than five years old £2, to Mr. Thos. Parrington, Lazenby.

Pony under 14½ hands high £2, to Mr. Peter Sturdy, Ingleby Mill.

Pony under 13 hands high £2, to Mr. W. Cass, Acklam.

Draught Horses.

Best brood mare £5, to Mrs. John Kitching, Whorlton.

Second £2, to Mrs. John Kitching, Whorlton.

Draught foal, colt, or filly £2, to Mr. J. M. Hutchinson, Tibbersley, Stockton.

Yearling draught colt or filly £2, to Mr. W. Goldsbrough, Maltby.

Two-year-old draught colt or filly £2, to Mr. Robinson Watson, Maltby.

Special Premium.

Best hunter, from four to nine years old, warranted sound, and qualified to carry 12 stone with hounds, £20, to Mr. Thos. Garbutt, Yarm.

Second, two-thirds of the sweepstakes of 10s. each, to Mr. A. Friedericksen, Roseville, Wolviston.

Third, one-third of the sweepstakes of 10s. each, to Mr. C. E. Maynard, Harsley Hall.

ON MANGEL WURZEL FOR SUMMER FEEDING.

Sir,—The utility of mangel wurzel is yet scarcely appreciated: it will soon become the most valuable adjunct to the farm, of any known vegetable, as by proper management it may be available throughout the entire year. My attention has been directed to its use for summer foddering of cattle, and I therefore had it left closer together in the rows than is usual; and as this season has become remarkable for drought, and consequent deficiency of cattle food, and having a large number of cows and neat stock, I have at length determined upon drawing the mangel wurzel for immediate use, which is cut up with the tops and mixed with cut chaff; and my cows are yielding a plentiful supply of milk, which is daily forwarded to the London market.

I have usually fed them upon grains, which cost 2s. 8d. per quarter, or 4d. per bushel; but the improved method of brewing has become so perfect of late, that in point of quality they are little better than moistened sawdust. It became then a matter of calculation which are the cheapest—the mangel wurzel or the grains; and this morning I had an experiment made, and the weight accurately ascertained. One rod in length and six rows in width produced in all 84 roots, which weighed with the tops 27 stone 12 lbs., equivalent to 27 tons 12 cwt. per statute acre, of which the roots weighed 19 stone 10 lbs., and the tops 8 stone 2 lbs. per rod, or the same in tons and cwts. per acre. I therefore obtain from each acre, by drawing one-half the roots, 13 tons 13 cwt. of excellent food, leaving a moiety of the roots for a winter crop, and which will, doubtless, become nearly equal in weight with the others by the end of October.

I have no hesitation in stating that the piece of mangel in question is the finest I have seen this season; and that portion experimented upon is the long-orange variety, and which I think best adapted for summer use, as the roots grow faster in the first portion of the year. It then becomes a question of value only, as compared with other substances, whether I continue to use them; and estimating them as a saleable article at 12s. 6d. per ton, or 7½d. per cwt., or 3¾d per bushel of 56lbs., grains weighing about 46 lbs. per bushel, the latter are in my estimation, vastly inferior to the mangel wurzel for any purposes of feeding.

To some of your readers this application of the plant may become highly beneficial at the present moment, and I make this communication to convince them that if they are growers of this valuable root, then they have plenty of green food at command, and which, if absolutely required, cannot be brought to a more profitable account.

I am now so thoroughly convinced of the utility of this root for summer feeding, that I shall direct especial attention to its future cultivation for that purpose, and thereby establish the fact that it really is what its name expresses it to be "The Root of Scarcity."

I am, Sir, your obedient servant,

Writtle, Aug. 14, 1857. Robert Baker.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

THE SALISBURY MEETING.

REPORT ON THE LIVE STOCK.

The prizes adjudicated this year have amounted to £590 for cattle, £280 for horses, £500 for sheep, £80 for pigs, and £124 for poultry; in all, no less a sum than £1,574. In looking at the tabular statement of numbers heading our notice of each class, it will be seen how large an increase of competition has crowded the Show-yard, and with a hitherto unparalleled collection of first-rate animals.

The list of prize-men and the names of the judges having already appeared in our columns, we propose now to offer a very general critique upon the various classes, making especial mention of any animals which are more particularly meritorious or defective.

THE PROGRESSIVE NUMBERS IN THE CATTLE CLASSES ARE AS FOLLOWS:

Meeting.	Shorthorns.	Herefords.	Devons	Other Breeds.	Total Beasts.
Lewes ......1852..	64	29	38	92	223
Gloucester ..1853..	75	43	55	20	193
Lincoln ....1854..	111	29	41	17	198
Carlisle ....1855..	98	32	23	19	172
Chelmsford ..1856..	78	40	55	44	217
Averages of five years.	85	35	42	38	200
Salisbury ....1857..	109	57	69	23	258

SHORTHORNS.

This breed, always constituting a strong attraction at the Society's meetings, is represented by a greater number of excellent animals than has been known for many years past.

CLASS I.—BULLS CALVED PREVIOUSLY TO THE 1ST OF JULY, 1855, AND NOT EXCEEDING FOUR YEARS OLD.

The labour of the judges here must have been comparatively easy, for a great difference, both in quality, form, and size, is observable in this class. Mr. Stirling's first prize bull is very handsome, and of beautiful quality to the touch. He is one of the finest animals we ever saw; but we would mention as peculiarly good points, his chine and forequarter, his back, hip, and thigh; he certainly adds greatly to the renown of his breeder, Mr. F. H. Fawkes, of Farnley. Mr. Langston's second prize bull is very level, compact, fine in bone, with a beautiful head and kind eye, though his chest perhaps is not so full and wide as in some other animals in the class. Of three other bulls we made the following notes, which will perhaps suffice to warn the exhibitors of their deficiencies, without our publishing names and addresses in full. One was "rather coarse in bone, and not of particularly good hand;" another had "a narrow chine, and breast not sufficiently deep and full;" third was "small, narrow, shallow, and ill-formed, but very prettily marked."

CLASS II.—BULLS CALVED SINCE THE 1ST OF JULY, 1855, AND MORE THAN ONE YEAR OLD.

Mr. Fawkes's prize bull is an admirable specimen of what a young Shorthorn should be, handsome and of great size, and of splendid quality; his chine and ribs being especially well thrown out, and showing great capacity of frame and strong constitution.

Mr. Brown's second prize is beautifully compact in form and of a fine and kindly-feeding character. Mr. Peel's red and white bull, bred by Mr. Ellison, of Kendal, is extraordinarily large in frame. Mr. Douglas, of Drem, shows a beautiful, symmetrical animal. Mr. Fisher Hobbs has an exceedingly good bull in this class, of very great size, well made up for its age, level, with a deep frame, and fine head. Lieut.-Col. Towneley's bulls are also very admirable, particularly his 1 year and 6 months old roan, which has a remarkable forequarter, and is altogether very superior. Nevertheless, we agree with the judges in their decision. Mr. Clough's bull, bred by Mr. Fawkes, is very large, but not wide enough in proportion. Mr. Wetherell's white bull is remarkably good—in the opinion of many, equal to that which took the second prize; his roan is also good, but not quite easy enough to the hand. Mr. Stratton's is an example of the impossibility of a beast competing successfully unless tolerably fat. Another bull in this class struck us as being plain and of somewhat too coarse a quality.

CLASS. III.—BULL CALVES ABOVE 6 AND UNDER 12 MONTHS OLD.

This, taken altogether, is not a very superior class; although the prize calf of Mr. Marjoribanks, 8 months and 5 days old, is very pretty indeed, of splendid quality, and having a wonderfully good coat. Mr. Booth's second prize calf, 10 months old, is also exceedingly beautiful. Mr. Douglas's calves are also well-formed, and capitally developed for their age.

CLASS IV.—COWS IN-MILK OR IN-CALF.

This is always a grand class, and this year contains some magnificent specimens of the immense-framed, wide-hipped, broad-breasted, handsome shorthorn cows. Col. Towneley takes both prizes. The first was for the wonderful animal which gained the prize at Chelmsford in the two-year-old class: we cannot now dwell upon all her merits, but must allude to her extraordinarily large proportions, her great breadth, her wonderful chine, chest, and forequarter, her hip, flank, and beautiful flesh.

The second prize cow is almost equally great and good, and extremely handsome; and notwithstanding her excellent condition for winning a prize, she has had two calves, and is now in-calf again. Mr. Wetherell, of Darlington, shows a very beautiful cow, bred by Mr. Harrison, that well merits the high commendation she has obtained. Mr. Booth has another wonderfully fine and well-made cow; and Mr. Stratton's two cows are remarkably good, large, level, broad, and roomy.

CLASS V.—HEIFERS IN-MILK OR IN-CALF, NOT EXCEEDING THREE YEARS OLD.

This class is very good indeed. Mr. Douglas takes the prize for a heifer of considerable size, and possessing some good points; but her forequarter and her thighs are not at all what they ought to be: we certainly prefer Mr. Booth's second prize heifer, and suppose the judges have been captivated by the extra amount of flesh laid on by the other. Mr. Booth's handsome heifer obtained the first prize at Chelmsford as a yearling. Mr. Stratton's heifer is beautifully compact, having also an uncommonly good back: she is fat, and beautifully fine, without being too delicate. Mr. Brown, of Swindon, has a very good heifer, particularly excellent in the points which are most wanting in the prize heifer. We noticed one very poor and narrow animal in this class.

Class VI.—Yearling Heifers.

We generally look for some wonderfully fine specimen of beauty and extraordinary precocious development in this class: but none such can be singled out this year. Mr. Stratton, Mr. Hewer, and Capt. Gunter, show some very good yearlings, and Mr. Booth's second prize is a beauty; but the high character of the class is more particularly owing to the presence of Col. Towneley's two heifers, one of which is extraordinarily wide and well-formed, and the other takes the first prize. This is far superior to any of the others, and though only one year and ten months old, has laid on an amazing quantity of beautiful meat. We do not wonder that the judges should have generally commended two such fine classes as Nos. 5 and 6.

HEREFORDS.

These cattle made a very fine show; indeed, far better than we remember to have witnessed before.

Class I.—Bulls calved on or before July 1st, 1855, and not exceeding four years old.

A remarkably good class, though small in numbers. The prize bull of Mr. E. Williams, of Hay, which took the second prize last year, is one of the most splendid animals of this breed ever seen.

Mr. Turner, of Leominster, has the second prize, for an excellent bull, possessing a good back, and particularly good twist and thighs, though rather tending to an abundance of fat. Lord Bateman's is a very good animal; and Mr. Hill's, of Shrewsbury, shows a capital chine, and good shoulder-point and fore-quarter, though rather fat.

Class II.—Yearling Bulls.

The prize bull of Mr. Price, of Pembridge, is a superior animal, very handsome, with beautifully fine quality of flesh; but if there is any defect, it is in that generally weak point, "behind the shoulder."

We like Mr. Hill's very compact and good second-prize bull; and also Mr. Fisher Hobbs's beautifully straight, square made, and handsome animal.

Class III.—Bull Calves above six and under twelve months old.

Lord Bateman's prize calf, and Mr. Rea's second prize calf, are both extraordinarily well developed for their age, very handsome, and of nice proportions.

Class IV.—Cows In-milk or In-calf.

This class is very meritorious. There never was a better Hereford cow shown than Lord Berwick's, which takes the prize. She is extraordinarily level and handsome, with a wonderfully superior hand, and justly adds at Salisbury to the highest honour she won at Chelmsford.

The second prize cow of Mrs. Palmer, of Ilchester, that gained the prize at Newton, is very beautiful in quality; and Mr. Beale Brown's six years old cow is extremely handsome, and good in very many respects: she took the second prize at Newton.

Class V.—Heifers In-milk or In-calf, not exceeding three years old.

A remarkably good class. Mr. Hill's prize heifer is remarkably good. That of Mr. Perry, of Leominster, is indeed a beauty; compact, wide, deep, with good back, flank, and twist; firm flesh, very handsome head, and fine bone.

Mr. Turner's second prize heifer is an exceedingly good one.

Class VI.—Yearling Heifers.

This is generally commended, and is certainly deserving of its distinction. The Earl of Radnor's prize heifer is an extraordinary beauty; her back, tut, and flank good; chine wonderful; head fine: altogether a most handsome young Hereford.

Lord Berwick's second prize heifer is another beauty; level, exceedingly well-formed, and admirable in very many points.

Mr. Maybery, of Brecon, Mr. Perry, Mr. Rea, of Knighton, and the Representatives of the late Mr. Powell, of Hereford, show very pretty and exceedingly good animals in this class.

DEVONS.

This breed shows itself this year unusually well, the various classes being exceedingly well-filled, and the animals very meritorious.

Class I.—Bulls calved on or before July 1st, 1855, and not exceeding four years old.

This is a splendid show. The prize bull of Mr. Davy, of South Molton, is of very beautiful character and quality, and particularly handsome. The second prize bull of Mr. Bodley, of Crediton, is wonderfully compact and straight, with exceedingly good loin and beautiful hand. Mr. Pope, of Dorchester, Mr. Fouracre, of Taunton, and Mr. Gibbs show very large, fine, and handsome animals.

Class II.—Bulls calved since July 1st, and more than one year old.

Here are some uncommonly good yearling bulls. Sir J. W. Buller's, which takes this prize, is wonderfully good for its age (only one year six days), but somewhat defective in loin, compared with others in the class. The second prize yearling of Mr. J. D. Halse, of Molland, is very beautiful though small; and Mr. Farthing also shows a remarkably good one.

Class III.—Bull-calves above six and under twelve months old.

Mr. James Quartly's prize calf is the picture of what a beautiful North Devon should be at only seven months old. His Royal Highness the Prince Consort takes the second prize for a very pretty calf, and also exhibits another not very remarkable for symmetry or breadth of frame. Mr. W. Hole, of Barnstaple, has here a calf of very great size, and a very good animal.

Class IV.—Cows In-milk or In-calf.

This is a very fine class, and justly commended by the judges. Mr. Quartly's prize cow is extraordinarily symmetrical and of beautiful quality; and he likewise gets the second prize for another animal scarcely less handsome. That of his Royal Highness, bred by Mr. Turner, of Barton, is highly commended, and is remarkable for her great depth and width, her full chine, and very handsome appearance. Mr. Gibbs' magnificent cow is very large and wide, and splendidly formed, and suckling a very beautifully calf. Mr. Turner, Mr. Farthing, Mr. Pope, and Mr. Baker, of Christchurch, exhibit exceedingly good cows: one from the Isle of Wight, and between nine and ten years old, is rather narrow and poor.

Class V.—Heifers In-milk or In-calf.

A remarkably meritorious show. Mr. Pope's prize heifer, which gained the prize at Chelmsford as a yearling, is beautiful, compact, and handsome, with excellent quality of flesh. He has also two other heifers very justly commended. Mr. Hole's second prize heifer, one of Mr. Turner's, and another of Mr. Webber, are particularly good.

Class VI.—Yearling Heifers.

Mr. Quartly's prize heifer is a great beauty, with a wonderful chine and extraordinary fore-quarter. Mr. Gibbs' second prize yearling is good, and also those of Mr. Halse and of Mr. Miller, of Sherbourne. That shown by His Royal Highness is exceedingly good, and deserving of its high commendation.

CHANNEL ISLANDS CATTLE.

Everybody is familiar with the fawn-like, spotted, "crumpled horn" cows, which yield the very richest of milk and cream, and the yellowest of butter, and are commonly spoken of as "Alderneys." However, the Jersey cattle are the best in the Channel Islands; the Guernsey breed, larger and of a red or dun colour, being almost equally renowned. Originally from Normandy, these breeds have been wonderfully improved by selection and by crossing between the upland and low-ground herds, and have been employed to improve both the true Alderney and also the distant Ayrshire, which is famous for the quantity rather than extra quality of its milk. The Jersey stock was as noted for its produce sixty years ago as it is now; but it was ill-formed and ugly, its redeeming points having been its fine head, crumpled horns, and capacious, well-formed udder. The old farmers were chiefly careful to perpetuate the valuable milking and creaming qualities; but about twenty years ago the symmetry and feeding character of the animals became more strictly attended to. And we would here observe, that the local agricultural society has arrived, by study of the best animals, at a "scale of points," as a standard by which to estimate the excellencies and defects of any animal of the breed. There are thirty-three points for bulls, and thirty-six for cows and heifers, the possession of all constituting "perfection." Were such a schedule of characteristics and desiderata to be drawn up for each of our great breeds, the criticism of judges and breeders would be much more systematic and reliable, and less influenced by private predilections and opinions than at present. We believe that the Royal Agricultural Society might very judiciously and beneficially turn its attention to this matter.

The Channel Islands cows will produce weekly ten to fourteen pounds of rich yellow butter, and from fourteen to twenty quarts of milk daily. In summer they are tethered upon pasture, eating the grass down as clean as if it were mown, and being shifted two or three times a-day. In winter they are housed, and fed on hay, a small quantity of straw, and ten to twenty pounds each of parsnips or white carrots. The Jersey oxen rarely exceed one hundred imperial stones in weight. The cows, when dried off at twelve or fourteen years old, fatten well, and make excellent meat. Those exhibited do not equal our expectation, from what we know of the breed.

Class I. — Bulls calved on or before Jan. 1st, 1856.

Some of the animals are good, but there is a general lack of symmetry about them, and very few are well ribbed up. Mr. Elphinstone's prize bull is of very great length, with a good fore-quarter: his back is not straight, but his head and bone are very fine, and his flesh excellent.

For Class II. there was no entry.

Class III.—Cows In-milk.

This ought to be the strong point of the show; but, though good in milking quality, too many of the cows have a narrow "hatchety" appearance, that is far from what we should like in a breed which is said to have been so much improved. Mr. Compton's prize Guernsey cow is very large, level, and good, her milk-vein and udder denoting first-rate milking properties. Mr. Pain's Alderney—a very much smaller breed—is very good.

Class IV. — In-calf Heifers not exceeding two years old.

Mr. Beckingham's prize heifer is a really beautiful little thing; her chine especially good.

Class V.—Yearling Heifers.

Mr. Maton's heifer is straight, but too narrow in frame: a remarkably good milker.

OTHER ESTABLISHED BREEDS.

The classes in this division are very scantily filled, and nothing of particular merit is observable.

In Classes I. and II. there was no entry.

Class III.—Cows In-milk or In-calf.

Mr. Cartwright's prize polled Angus is very good. Mr. Crisp's Suffolks not particularly superior.

Class IV.—No entry.

Class V.—Yearling Heifers.

Mr. Shaw's Suffolks is very good. Lady Pigott's West Highland is noticeable, as being the only specimen in the yard of this small, shaggy, dun breed.

The special gold medal, offered by a French gentleman for the best polled bull of any age, is awarded to Mr. Badham's large red Suffolk—a very good animal.

HORSES.

The number of horses, including stallions, mares, &c., shown at each of the more recent meetings, is as follows:—

Meeting.	For Agri. Purposes.	Roadstrs. &c.	Drays.	Hacks, &c.	Total.
Lewes 1852	80	7	0	0	87
Gloucester, 1853	63	35	0	0	98
Lincoln.... 1854	76	12	0	18	106
Carlisle .. 1855	83	0	0	90	173
Chelmsford 1856	123	0	7	66	196
Average of 5 yrs.	85	18	7	58	168
Salisbury.. 1857	101	0	10	40	151

In comparison with the show at Chelmsford the show at Salisbury falls rather short, both in quantity and quality. But as we did not go expecting to find great excellence in the equine breed from that quarter, we were much pleased with the general merit that met our view. Our attention was drawn to the judicious and successful endeavour which the Suffolk men have made to correct the deficiencies that we are generally prone to consider as appertaining to their stock. We must say that the Messrs. Barthropp, Crisp, and Ward, &c., deserve great praise for their unremitting exertions to improve and carry forward the stock of which Mr. Catlin, with his celebrated Duke, laid the foundation. They seem to be fully aware of the necessity of seeking for mares of great size and substance in other counties, and are thus producing a superior strengthy class of horses for agricultural purposes. For illustration of this improvement we point to Classes II., III., and IV., in all of which the Suffolk horses, except in one instance, carry off the prizes. In our opinion these are just the horses that are wanted in Wiltshire, and indeed, in all our light-land districts where active clever stepping is required, combined with considerable substance; and we entertain no doubt, arguing from the great demand for them now felt, and the activity of breeders to supply that demand, that their presence will be nearly cotemporary with their reputation: and when we tell our readers that amongst the two-year-old stock horses, sales were effected in the yard at £100, £150, and £200, and among fillies of the same age at £70, £80, and £100, no one can deny the increased popularity of the breed.

Reporting these meetings annually, we are favourably circumstanced for tracing the progress of those animals that are exhibited year after year, as is sometimes the case. We have generally found that the completely furnished yearlings do not answer the expectations formed of them. The second and third stages of their growth do not seem to confirm the first. And amongst other instances we observed of this sort at Salisbury was the horse "Koh-i-noor," when a two-year-old, of whom we then remarked, "he is furnished like a four-year-old horse." This year he is four years old, and save for a redeeming pair of legs and feet, would be termed a weedy animal. Physical, like mental precocity, is not a condition to be much desired. But such horses as these have not always received rewards; bigger, bonier animals, though less well furnished, have generally carried off the distinctions, and by their after-course show the good judgment exercised by the judges. Maturity in yearling or two-year-old horses is not wanted, but expansiveness is.

CLASS I.—STALLIONS FOR AGRICULTURAL PURPOSES, FOALED ON OR BEFORE THE 1ST OF JANUARY, 1855.

We have here thirty-seven entries. Of these, sixteen are Suffolk horses, fifteen belong to Berks, Somerset, Hants, and Wilts, two to Lincolnshire, one to Cambridgeshire, and one Clydesdale.

"Matchless," the property of T. B. Hildyard, Esq., of Newark, a Lincoln horse, received the first prize; and "Young Inkermann," a Suffolk and Lincoln, belonging to Mr. Baker, of Cambridge, receives the second. Out of five high commendations, four are taken by Suffolk horses, and one by a Lincoln horse, the property of Messrs. Ogden of Stamford, Biddell near Ipswich, Wilson near Woodbridge, Barthropp near Woodbridge; and two out of the three simple commendations are awarded to Suffolk horses, the property of Messrs. Sexton near Sudbury, and Williams near Ipswich.

With respect to the first prize there seems to be much dissatisfaction. We have repeatedly urged that a due deference should be paid to the opinion of judges, since they have better opportunities of forming an opinion than those who merely see the animals pent up in their standings. The action of a horse cannot be judged of by those who do not see him move, nor can his soundness or unsoundness often be ascertained in his quiescent state. A horse that may have everything to recommend him in point of shape, may on account of some unsoundness be thrown out, and an animal of inferior appearance be preferred. Still, as the public attends these shows for the purpose of educating their eye and judgment as to the form most desirable for breeders to select, it is liable to be misled, especially as in the case instanced, where the finest animal may have to yield to one of inferior make, because of some unsoundness that is not to be detected while he is in a state of rest. Where unsoundness is an accidental property, too, judges should in nowise so mislead opinion. Our remarks may or may not refer to the first and second prizes in this class. Mr. Hildyard's horse has a very fine top, but very bad and somewhat coarse legs. Now there is no use in a fine top without it has good legs to carry it. Last year this horse contested the prize with Prince Albert's Clydesdale, and was thrown out on account of not trotting; this year he trots, and so perhaps obtains the advantage over others, as good and better horses in the same class, that Prince Albert's horse did over him. He has a splendid head, neck, and shoulders: his quarters are square and old-fashioned, and he derives a very noble appearance from one of the most beautiful manes we ever saw. Mr. Baker's "Young Inkermann," also a grey, has pushed up his comb since he was at Chelmsford, where he took the first prize in the dray-horse class, and this has thrown the head more in proportion to the body. He stands seventeen hands; his girth is eight feet—truly a splendid fellow. The best horse we saw in this class is "England's Glory," now the property of B. Taylor, of Peterborough. His sire was the "England's Glory" which took the first prize at Windsor in 1851. Here is substance and style. Those who wish to breed for the London market should employ this horse. His legs are clean and unblemished. Those of "Matchless" cannot compare with them. His feet, too, are all one could wish. In height he stands 17½ hands.

Mr. Biddell's "Major," highly commended, is a very superior horse; quite a type to Suffolk breeders—Catlin's blood in the head and eye. There was a great struggle at Chelmsford between this and the first prize horse, which ended in the Suffolk going second. We scarcely ever saw such a barrel. The legs are perfect, without a puff. Mr. Wilson's "Captain" is of the same sort; and his "Duke" too, which is highly commended, notwithstanding he is small, and his legs are blemished. He comes of Catlin's stock however, and is mostly of his distinction. Mr. Sexton's "Chelmsford Champion," which took the first prize amongst the two-year-olds at Chelmsford, supports his reputation, although simply commended. Mr. Barthropp's highly-commended "Hero" and "Hercules" display fine breeding—style, bone, substance. Well done, Mr. Barthropp! "Young Samson," Mr. Frost's property, of Linton, Cambridgeshire, for a Suffolk, has the greatest amount of bone we ever saw. His sire took the first prize at Gloucester; and his brother, by the same sire, takes the first prize this year in the two-year-old class. Most of the horses from the southern counties are small, and generally deficient.

CLASS II.—STALLIONS FOR AGRICULTURAL PURPOSES, FOALED IN 1855.

There are 24 entries. Of these 14 are Suffolk horses, 6 belong to the Southern counties, 1 to Lincolnshire, 1 to Leicester, and 1 is a Clydesdale. The Suffolks carry off both prizes, all the six high commendations, and one commendation; while Berks, Wilts, &c., out of four commendations, take three. This, then, is quite a triumph to the Suffolk breed. Mr. Clayden's "Royal George," brother to Young Samson in the class above, takes the first prize. He stands 16½ hands, his quarters are something to see, his substance great, and withal his appearance is quite fashionable. Mr. Wilson's "Young Duke," which wins the second prize, is of very short body; the girth is great, ribs well arched, completely furnished, legs clean, feet good; Catlin's Duke's blood again; the head and neck alone prove that. Mr. Webb's "Why not" is of the same blood: great beauty, but not bone enough. Mr. Ward exhibits two singularly good animals, "Boxer" and "Young Colonel;" one highly commended, and the other commended. Boxer has more bone than any horse in this class; and the other is nearly equal in this respect. Since we first noticed this gentleman's stock we cannot but observe a very great improvement, and the attention he has given to an increase of substance and power we hope he will continue: he will benefit himself and benefit the country. Mr. Badham's "Captain" (highly commended) comes very near in point of substance, but loses ground in point of fashion. Mr. Gobbitt's "Young Briton" (highly commended) promises well; plenty of expansion; will be very big; well made; feet splendid. Mr. Pond's "Emperor" (highly commended) is a heavier-topped horse than Royal George, but less expansive; his girth is enormous. Mr. Crisp's highly commended colt is a gigantic fellow; he looks gaunt and raw, like one that has grown beyond his strength; his sides look flat, and his quarters lank. Some would call him washy; but we are of opinion he will fill up and make a wonderful horse at six years old. Mr. Bennison's "Napier" is a good black horse, with clear legs, and big, sour carcase. Mr. Hitchcock's grey roan, too, is well furnished and very promising; his legs are exceedingly good. The same remark will apply likewise to Mr. Porter's commended "Cotswold," a bright bay horse. Mr. Berridge's "Victor," who was commended at Chelmsford, is here, and though he receives no distinction, he well supports his reputation. He is very big, ribs finely arched, and shoulders well set. Mr. Rodwell's commended "Buccaneer" is a respectable black-legged brown horse, with good feet, and plenty of fashion. Mr. Mills also shows two very useful grey roan horses, with capital black legs, good feet, and fair substance, for one of which he obtains a commendation. This class, as a whole, is eminently successful, and that which obtained the most general public commendation.

Class III.—Mares and Foals for Agricultural Purposes.

In this class we have 26 entries. Of these eight are of the Suffolk breed, and 18 from the southern counties. The Suffolks carry off both prizes again, and three high commendations; while the other breeds take five high commendations and two simple commendations.

Mr. Wolton's mare receives the first prize, and Mr. Wrinch's mare receives the second. Here is all one can desire, both in mare and foal. The mare has a beautiful head, fine expression, rainbow neck, square roomy frame, splendid quarters, unexceptionable legs, and fine open foot. To see is to admire. We never saw a better forehand than in Mr. Wrinch's mare: she, too, is good everywhere. Mr. Gobbitt's mare, highly commended, has the same feature, fine expansiveness of chest; is, moreover, of wonderful size and beauty, but perhaps somewhat too fine in the bone. The foal is equal to the mare. Both are types of their class. Mr. Hutt's is a very fine foal: his mare is very roomy, but less fashionable than the above. We were very much struck with Mr. Lavington's highly commended, which we should place in the same class as Mr. Gobbitt's; they are both clean legged, well bred, superior animals, well calculated to breed first-class carriage horses. Had Mr. Ward's foal been equal to the mare, there would have been considerable difficulty in awarding the first prize, for the mares both stand A1: she receives a high commendation. Mr. Cordery's "Whitefoot" is a good, old-fashioned sort of mare, highly commended,

"Square and bluff,
Strong and tough;
Kind and ready,
Always steady."

Mr. Little's foal contributes more to the distinction of a high commendation than the mare. Mr. Rawlence shows a fine, roomy, roan mare, with good black legs, quite worthy her high commendation. All the Wiltshire and Devon mares and foals are good, with one exception; but there is nothing equal to Mr. Carter's "Primrose" of last year.

Class IV.—Fillies for Agricultural Purposes.

There are 14 entries. Of these 12 are Suffolks, and two Wiltshire animals. Two prizes and two commendations are given to the Suffolks, and one high commendation to a Wiltshire filly. This is always an interesting class, and it is so this year. Messrs. Long and Wrinch take respectively the first and second prizes. We had great difficulty in distinguishing at first sight between these two fillies and one that came in between them, they are all so good. Mr. Wrinch's is a beautiful creature, compact and large, but she wants more bone—and this requirement Mr. Long's possesses. Mr. Barthropp is again successful. We commend him, as the judges do, for obtaining more bone, but he wants more yet here. How is it that we find nothing here of Mr. Ward's? We hope he has forgotten the little dispute at Chelmsford.

DRAY HORSES.

Class I.—Stallions foaled on or before the 1st of January, 1855.

There are here six entries. The only prize given is awarded to Mr. Buller, near Banbury, for a 6 years' Oxfordshire brown horse. This horse was commended at Chelmsford. He resembles a tower of strength. The union of the neck and shoulder is admirable: his bulk is perhaps too great to be consistent with perfect symmetry. Mr. James's is a horse of great promise. Mr. Coles's "Lincoln" wants chest, while Mr. Tod's is flat-sided, and not fashionable.

Class II.—Stallions foaled in the Year 1855.

There are two entries here. Lord St. John's roan horse takes the prize. His girth is 7 feet. He stands well; good back; rather narrow behind the shoulder; hocks spoiled. Mr. Belcher's "Sir Robert" is a bigger horse than "Charley," but his shoulders and neck are not so good, nor has he so much style.

Class III.—Mare, with her Foal at her feet.

Mr. Rawlence obtained the prize for the only entry. The mare is a fine powerful animal, but the foal is nothing remarkable.

Class IV.—Filly, foaled in the Year 1855.

Lord St. John has the counterpart of his horse in Class II., precisely the same style, and both are roans. She receives no prize, and is the only entry.

OTHER HORSES.

Class I.—Thorough-bred Stallions for getting Hunters.

We have here fifteen entries. "Hobbie Noble," the property of Mr. Groves, of Plompton Hall, near Knaresborough, an 8 years thorough-bred bay, bred by Lord John Scott, sire Pantaloon, takes the first prize. He is all one can desire—head, neck, shoulders, arms, quarters—all save the thighs; these rather too light. Mr. Manfield's "Spencer" receives the second prize. A fine crest, forehand not unexceptionable, too little bone. Then we have old "Theon," out of Maria, by Emilius—a splendid horse—looks as fresh as a May-day, and "The Circassian," Mr. Palmer's horse, sire Pyrrhus the First—what legs and feet! There might be more substance, more girth; head and neck very fine. "The Knight of Gwynne" drew general attention. A sprightly horse, the property of the gentleman who receives the first prize. Notice his shoulders, and splendid set of the neck. The eye most expressive, and the head exceedingly noble. "Flagellator" is a horse of great substance and beauty, and "Stotforth," Mr. Kirby's horse, sire Bay Middleton, has the same merit to recommend him. He is highly commended. Mr. Webb's "Master Robin," a very fat old horse, meets the same distinction.

Class II.—Stallions for getting Hackneys.

There is but one horse, although there are twelve entries, and that horse is "Hotspur," a noble lively fellow, who ran second to The Flying Dutchman for the Derby. He has a wonderful top, but bad thighs: the head and neck are specially expressive of good breeding: his legs are perfect. To our eye he has scarcely substance enough to get hacks, except out of strong, big-boned, half-bred mares. He bears off the prize in this class, and nobody can here doubt the propriety of the decision, since his rivals are but a medley lot.

Of Class III., in which there are nine entries, and in Class IV., in which there are four entries, we cannot say more than that the prize in the first case was awarded to Mr. Grove for "Speculation," and in the second to Mr. Starkey, for "Caper."

Of these extra classes we may say that there is more blood exhibited amongst the stallions, and less good breeding amongst the mares, than we remember to have seen at Chelmsford. The show was very creditable to the southern counties, however, and all should be thankful to those gentlemen who are thus willing to exhibit their valuable horses for the public good.

We are glad to see that the Society has availed itself of the advice given with respect to its duty to offer prizes for thorough-bred horses, hunters, hackneys, &c. The Royal Agricultural Society may thus impart an incalculable benefit upon those districts where she pitches her tent. It is her business to arouse attention to a national want—a want that agriculturists can alone supply—and to point out the means by which they may do it.

SHEEP.

The number of Sheep at different meetings is as follows:—

Meeting.	Leicesters.	Southdowns, &c.	Long Wools.	Short Wools.	Other Breeds, &c.	Total.
Lewes . . . 1852	55	88	15	0	25	183
Gloucester. 1853	64	95	80	0	53	292
Lincoln . . 1854	102	67	96	0	38	303
Carlisle . . 1855	119	51	63	0	97	330
Chelmsford. 1856	60	105	52	0	2	219
Average of 5 years	80	81	61	0	43	265
Salisbury . . 1857	66	118	84	128	37	443

Our survey of the Sheep classes at once convinced us that the show was greatly above an average one in point of numbers, and on closer inspection we were soon assured of its superiority in most other respects. *The class of Leicesters* we did not think quite equal to that of former years, although Mr. Sanday exhibited some splendid animals of the breed, which fully entitled him to the high pre-eminence he achieved. The honours he obtained were unequalled in any class, or at any time, so far as our recollection serves us—taking all the prizes, and three high commendations. No. 420 is in beautiful form and proportion, well thrown out in every part, great in size, yet compact in frame; the model of a good Leicester ram; his head handsome and mild-looking; ears rather drooping, but not detracting from his handsome looks; neck full, but not clumsily thick; breast full and broad, chine flat and well thrown out and covered, plaits perhaps a little defective for a first-class animal, but very good ribs, well hooped out, and exhibiting a broad level fat back, and loin all you can desire; hips wide, and in their right place; no objectional distance between hip and rib, so that the frame retained its correct rotundity; rump very good and full, but rather short; dock fair; flanks, twist, and thighs all right, offal fine, and wool very satisfactory—1st prize £25. No. 419: The above remarks would nearly apply to this sheep; his head is, if anything, rather handsomer and finer than 420, his ears rather long and fine, and neck perhaps too thin, and shoulder rather defective; plaits are good, back and chine well out in good form, rump too short but wide, twist fine, thighs not full, but flank good; wool rather strong in fibre, and heavy fleece; a handsome well-made sheep—2nd prize, £15. No. 445 in the second class: We have above attempted a humble outline of Mr. Sanday's prize shearlings: to proceed to describe seriatim the other beautiful animals he exhibited would take up too much of our space, and is also superfluous, as they are so much in character, that one notice, with ordinary care, will suffice for the whole flock; we shall merely, therefore, hint at some slight difference noticed on our hasty inspection. No. 445: very heavy plaits and great depth of frame, thighs somewhat too light—1st prize of £25. No. 444: "Like a pea in a peck," but a broader loin and heavier wool—2nd prize of £15. Nos. 441, 442, and 443, all beautiful animals, and all received high commendation.

The 3rd class, *shearling ewes*.—Mr. Sanday was more than commonly successful, and deservedly so, as they manifested a decided superiority above the whole class—their forms so perfect, their looks so handsome, and general contour so full and fine as to retrieve the somewhat medium character of this class.

Mr. Pawlett has long been the acknowledged close competitor with Mr. Sanday for the Society's honours, and we therefore give him the next place in our notice. His shearlings are remarkably similar in form and character, No. 426 perhaps somewhat longer in frame. We prefer the form of their rumps to some of Mr. Sanday's sheep; but they are not so large in frame, nor do we think them so profitable to the grazier as a class; but they are quite equal in beauty and proportion. It should be borne in mind that the prevailing taste of the present day is, to combine a little more substance with beauty and proportions of frame. Hence the decisions—correct decisions of the judges in the Leicester classes. The older sheep shown by Mr. Pawlett possess the usual full, compact, rotund form, with all those admirable accompaniments of perfect rumps, broad fat backs and loins, full thighs, flanks, and plaits, and chest and beautiful looks; indeed the only defect, if defect it is, is in being, rather too small, and showing a longer leg. No. 452 received high commendations. Mr. P's were all two-shears; these shown against older animals do not always succeed according to merit.

Mr. G. Turner, of Barton, as he always does, exhibited three highly creditable shearlings, denoting truth in breeding and great usefulness; in character large and profitable. His shearling ewes, we thought, approached next in their class to Mr. Sanday's; but not so regular and uniform in frame and beauty.

Mr. R. W. Cresswell, of Ravenstone, brought forward some exceedingly useful sheep in the shearling class. His No. 440 has capital plaits, and out shoulders, back level and very broad, rump first-rate. His older sheep denote great usefulness, and No. 463, a capital animal, was favoured very properly with a high commendation.

Lord Berners, of Keythorpe Hall, exhibited a very profitable sheep, with every characteristic denoting good grazing capabilities and true Leicester blood: he was highly commended.

Mr. F. Spencer, of Claybrook Magna, near Lutterworth, exhibited several very pretty and excellent sheep, but too long in frame and high on the leg for taking the lead in the first class. His ewes were of similar character. He should aim at a greater depth of frame. He has many other good qualities.

Mr. Radmore, of Court Hayes, near Thorverton, Devon, exhibited some very creditable shearlings: we thought their chief defect was want of real "substance." Leicester sheep must be compact for first-class sheep.

Messrs. J. Burston Corner, of Longforth, near Wellington; J. Gregory Watkins, of Woodfield, near Droitwich; and Mr. Webber, of Halverton Court, near Tiverton, were creditable exhibitors in the respective classes of Leicesters; but the same fault was theirs as named above—the want of compactness in form and depth of frame.

Mr. John Bodley, of Stockley, Pomeroy, exhibited some good sheep; but to our judgment these did not denote true Leicester blood: if so, they must be characterized as the large Leicesters.

Judging from the exhibition of Leicester sheep from the general remarks made to us personally, and gathered otherwise incidentally, we are inclined to believe that this class of sheep are retrograding in public favour. As a class of sheep used for crossing with Downs for breeding "half-breds," they have decidedly gone down, and are almost universally superseded by the larger long-wool breeds. That they are a class of sheep pre-eminently adapted to fatten well on inferior pasturage, where folding is not practised, is generally admitted; but within the last quarter of a century a class of sheep, known as the Lincolnshire Longwools, have been so greatly improved in their fattening qualities and in other respects, that they are fast supplanting the old Leicester breed in all medium pasture-lands. Indeed, true Leicesters are hard to find in large quantities at our fairs and markets. All have some cross or other. This may account for paucity in numbers at Salisbury. The society stipulate that none shall compete in the class but pure Leicesters.

The Southdown Classes.—Of all the sheep classes this always attracts the most attention and creates the mostst interest, no doubt in a great measure from the known popularity of the breed; still the greater popularity of some of the well-known breeders has something to do with it. We soon hear the inquiry, "How does Jonas Webb stand this year?" "Where is Rigden?"—"Has the Duke of Richmond—Lord Walsingham—Overman, Scott, Hayward, Pope, Sainsbury," &c., "got anything?" each respectively having their favourite stocks, and desirous to give honour where it is due. The universal reply, however, is that this year Jonas Webb sweeps the whole—makes a clean sweep of every prize, and the best of the high commendations, with two additional special commendations. We need not stay to inquire how is this? The fact is patent and undisputed: Mr. Jonas Webb does possess the best flock or breed of Southdown sheep in the world; and if he be beaten, as he was last year, accidentally perhaps—but beaten he was—it was by no second-rate breeder, or second-rate animal. It was by one who has long stood deservedly high in public estimation as a breeder of Southdowns—by one who was so right-minded that on learning of his success he playfully remarked that it was what he had long expected, and therefore he always exhibited, feeling fully assured that some time or other the judges would make a mistake, and he might reap the reward. So careful was he not to detract from his friend Webb's great merit as a breeder. We are strong admirers of Mr. H. Overman's sheep; they possess large and symmetrical frames of great beauty and substance, worthy to stand in that high position in which they have again been placed this year; but still, we cannot do otherwise than give the palm to that prince of Southdown breeders, Mr. Jonas Webb. He has this year outdone all former years, so far as he has shown, and has most fully resumed the high but endangered position in which his friend Overman placed him last year. We should much like to pit these two celebrated breeders in full competition next year at Chester, and trust they will show in every class and age, even to aged ewes; because if one takes all the prizes for rams, so does the other for ewes, and with animals of transcendent merit. Mr. Jonas Webb, then, stands at the head of his class, and this year he is first in the foremost rank. We will notice a few of his present year's exhibition. No. 510, in Class I, is a splendid shearling; his countenance (a great distinction in this class of sheep) is good, not too dark, except the tip of the nose may be considered to possess a dark hair or two too many, which for our part we have not discrimination enough to decide, nor do we think it to be a matter of such prime importance as is now given to it. Even in this very show we have seen a prime sheep put aside merely on this account, and made to take second place. We think it wrong. A fine complexion for a fine lady, if you like; but we look for more common sense in common things: a few darker hairs on a face should not disqualify any animal: 'tis merely a matter of taste, not profit. The object of our society is to breed animals of the greatest profit, not greatest beauty, although it may be well to combine both, but never let prime proportions give way to a slight discolorization of the face. But we are digressing. Say there are two or three darker hairs than we like, but he is a fine animal, and worthy of distinction; he is of great size, and exceedingly proportionate throughout, and bids fair to make up a first-class sheep for next year. Almost the only semblance of a defect we ob served was in the hinder legs being rather too straight or steep, *i.e.*, too much under him; but his truly deep frame, wide chine, and shoulders all well covered, his broad fat back, and springing rib, capital flank and under part, all denote a first-class animal. We have seldom seen a better, and his girth is equal to any coming under our tape—Prize of £25. No. 511 is scarcely inferior to him; his face and legs a little too dark for the most fastidious; but view his truly correct frame, broad chine and shoulders, all well covered, his full rump, and dark and wide full twist, and thigh better than 510, and stands better, and you cannot fail to admire—Prize of £15. In this class are many first-class animals, and, as we have said, Mr. Webb takes four high and special commendations in it, with animals in every way worthy the distinction. We shall not stay to notice them further than to say, they perfectly support the general contour of the Babraham flock. The whole class contains 51 specimens of the breed, in great beauty of frame, and comprising every variety of the pure Down. To attempt to go through a class so large consecutively, will occupy much space to little purpose; we will therefore content ourselves with noticing such as struck us as most worthy of note. Mr. Rigden shows four beautiful animals, full of condition, with abundance of wool, and models of each other; we thought them not quite so well got up as some we have seen this first-class breeder exhibit. Lord Walsingham exhibits six capital specimens of the class: No. 482 is a very good shearling, beautiful in form; 484 is worthy of favourable mention in every respect; as is also 485, having a very even back, but rather small frame; they are not so full in growth as some, but otherwise finely proportioned, and possess length of frame; with the exception of 480, they are by the Chelmsford prize sheep. The Duke of Richmond's are quite in his usual character, good in every respect, but rather small in their proportions. His grace exhibits four. Mr. Sainsbury's lot of six denote his usual character—greater length than many others, quite as high standing, very useful, but less proportionate than some. Mr. Scott Hayward shows four very useful well-formed sheep, but rather too small, and we did not admire the wool, although plenty of it. The character of the sheep is exceedingly good, and denotes great care in breeding. Mr. Pope shows two fine animals of very creditable character, with good wool and fair quality. Mr. Jonas Webb exhibits nine in this class, of which we have already spoken. Mr. Farquharson shows two useful sheep, and Mr. James Harding shows six creditable animals. Mr. H. Overman is an extensive exhibiter, having brought forward no less than ten in this class, every one of them of a first-class order, denoting great substance, large and well-formed frames, but they are not quite equal to Mr. Webb's for beauty and uniformity of proportion; their countenances are superior to his, and several have remarkable docks: wool of first quality and weight. We took pains to inspect the whole lot, and give to them our unqualified approbation. The Duke of Beaufort, Mr. T. Ellman, Mr. Selby, and Messrs. Moore, Boys, and Orme Foster are very creditable exhibiters in this class, but we did not notice any point in these animals worthy especial remark.

Class II.—*Rams of any other age.*—With this class we were much interested. Here were several old friends' sheep, that we knew last year, and some even earlier than that. Here was Mr. Jonas Webb's Paris sheep, for which he there refused 500 gs , and then could only obtain second place at Chelmsford; here was his sheep of high promise at Chelmsford, but there unnoticed, though now he takes first prize. Here we trace the descent of numerous flocks: Mr. Overman's shearlings, from his prize sheep, and older sheep from Mr. Lugar's prize sheep at Gloucester; Lord Walsingham's, from his Chelmsford prize sheep. And then we refer to the prices brought by some of this favoured breed. No. 555 stands before us. His price last year 500 guineas; this year he is let for 197 guineas, for America, where he is going at the close of the season. nd yet, No. 555 has only second place here. Many breeders can point to sheep making almost fabulous prices; the Duke of Rutland, Lord Walsingham, Mr. Overman, and Mr. Rigden standing high in this department of business. Mr. Scott Hayward, Mr. Sainsbury, and Mr. Pope are also making great prices of their rams. In this class, No. 556 takes the first prize of £25. He is a splendid specimen of the breed —fine and full in form, and noble in appearance. He begins with a head of exceedingly good form; and the colour of his face, to which he is much indebted, is just what fastidious Southdown men so highly approve; ears not quite to our taste in size or setting; neck full, and well set to head; shoulders and chine remarkably good and wide, with a tremendous chest, and good plaits; his chine and back very wide, and well covered, cracked throughout its whole length; ribs correctly springing, forming a capital rotund frame, of great depth. His girth is great (nearly five feet); his plaits are full, but not set out, being one regular fulness; his loin and hips are wide, the latter perhaps causing a defect, from being set too backward. The first rib and hips are too far apart, and cause a slight letting down of the body near the flank; the rump is short, and is not good; dock fair. His thighs are not heavy; his legs too upright, and too far under him; twist and flank not good, but fair; his wool all you can fairly desire, and a good quantity of it. No. 555 is, we think, a better sheep—indeed, we have it on record that this was our opinion last year; and we still adhere to it. He has all the good proportions of the above, with none of his defects. We care not for his somewhat darker face. He has a better fore-quarter, comprising all the proportions named above, and a much better hind-quarter; his rump first-rate; twist, thighs, and flank exceedingly good. We query if we ever saw a more complete animal of his class—so handsome, so widely proportioned, and so good. His wool is quite equal to No. 556. He is more noble in appearance, and is two inches wider girth. He obtained the second prize of £15. No. 557 is highly commended, and possesses most of the above recommendations. Mr. Rigden shows some very good sheep in this class. No. 539, we think, stood third of the reserved sheep in the class. To describe a good Southdown, is to describe him. His back is exceedingly good, and dock very fat; his general proportions all right, and plenty of wool. Mr. Sainsbury's are strong, heavy, good sheep, six in number. Be it false taste or what, Mr. Sainsbury's stock are very good, but not in perfect proportion: we think he might alter it. The girth of one was good—near 4 ft. 10½ in. Mr. Hayward's denote good character, and attention to proportions; and this must be given, or prizes cannot be obtained. Mr. Harding's are fair, useful sheep, as is Mr. Farquharson's old sheep. Mr. Overman's lot, we think, stand next to Mr. Webb's in useful character, though not so compact as Mr. Rigden's. There, expansion of frame always pleases, as it denotes great capacity for fattening and carrying heavy weights of flesh.

The class of Shearling Ewes.—In this class Mr. H. Overman obtained both the first and second prizes with two pens of splendid animals. This is an achievement for which many spend their strength and talent in vain. We congratulate the breeder of these animals, for seldom, if ever, have we seen them surpassed—such uniformity of frame, large proportions, and great beauty. The rams certainly show many fine qualities, but we must go to the females for real beauty and fine contour of frame. These have it in an eminent degree: backs even, fat, and good throughout; fine open well-favoured countenance, with such looks as to rivet your attention; the form all you can desire, so as to make it tiresome to describe. You have only to imagine a perfect Southdown ewe, and you have the whole ten before you. 591 took the first prize of £20, which was correctly awarded; and 590 the second prize of £10. The Earl of Radnor competed in this class, but his ewes were too delicate in frame and looks. Lord Walsingham's were pens of good animals of more frame and substance, as also were Mr. Sainsbury's and Mr. Lucas's pens, all of which were very properly commended. Mr. Scott Hayward again showed, but without success; the same stiff character in the wool, and the sheep rather diminutive. Mr. Pope's pen deserves notice, as does Mr. Forster's. The Duke of Richmond's were very pretty, but small, and owing to accidental burning in the railway truck did not, of course, show favourably. The Duke of Beaufort is regularly coming into the field with very acceptable Southdowns; we heartily wish him success, and trust he will long be an exhibiter, and not long an unsuccessful one. One or two other creditable exhibiters showed, but we have nothing to remark. And in closing our observations on the Southdown classes, we cannot deprive ourselves of the pleasure of congratulating the Southdown breeders on their successful efforts to produce such an extraordinary show of animals; never was a better or more numerous exhibition of first-class animals brought together, and the few dimensions we took proved that the breed does not by any means degenerate. We are not individually possessed of the idea that pure Southdown sheep are the most profitable animals in the world to breed, but they are certainly the most popular; and they are carried up to a greater perfection than any other breed, and make the most money. We should like to see on many farms comparative experiments carried out, to prove which variety of stock is really most beneficial to the community; for much as we admire the talent and spirit displayed by Jonas Webb and others, we have grave doubts if these crack breeds are the most useful for the general public. We desire to grow the greatest quantity of food in the least time. Will Southdowns produce it, or must you resort to a larger variety of sheep? We beg the attention of our nobility and gentry to this important phase of the subject. Let each give up his favourite hobby, and cater for the general good.

Long-woolled Sheep not Leicesters.—We never saw this class of sheep better represented at any meeting of the Society. They were more numerous at Lincoln, but at that time many were brought forward for sale. The number was made up of first-class animals certainly, but not of the precise order shown at Salisbury. We never saw so many animals of such great merit before, and the difficulty in the adjudication must have been great. So far as we could judge, the largest, handsomest, firmest, and best proportioned animals took the lead. We noticed sheep we thought larger, some certainly higher, and of colossal proportions; but on closer scrutiny a neck was wrong, or a back was high or hooped, or again not level, or a beautiful top and scant underneath parts, or the wool objectionable. There was something or other which detracted from his perfectionable qualities. Taking the classes together, we think the judges performed their hard task creditably. In Class I. there were no less than 44 large and beautiful animals for their inspection, any individual specimen being qualified for a prize. No. 619, Mr. W. Lane's shearling, was a splendid fellow for his age, 16 months, and girth 5 feet 1½ inches: he is a noble-looking animal, of exceedingly fine form and mould: his head is well formed, with long face and ears, and kind beautiful look, his neck full and well set to head, breast large and fully out, capital fore-quarters, deep through the chest, with back and loins of first order and firmness of thick flesh, plaits well thrown out, and ribs admirably springing, causing a good full frame; his rump, twist, and thighs very good, but his flank is not heavy, and his purse is bare; wool of fine quality and large in quantity — 1st prize of £25. No. 622 is also the property of Mr. W. Lane, and possesses much of the admirable outline and character of No. 619, but his back is not so well covered, chine not so good, and has a shorter and less rump; but the general proportions are admirable, and he is of a greater length, and his girth exceeds the other, being 5 feet 3 inches, which for a shearling is very great. In the same class at York the girth of the prize shearlings was 5 feet 1 inch. We thought he very properly carried off the second prize of £15. No. 628, Mr. Porteus' sheep, is highly commended, and formed, we understood, what is called the reserved sheep*, *i. e.* third in the class. He is not so large as some others, but possesses a fine fat back and firm mutton, capital plaits and chest, long in frame, very handsome, but does not stand high: wool all right. His consistency and firmness of mutton would vie with the Southdowns; his girth 4 feet 11½ inches. We will just run through the class, remarking as we pass along. Mr. Lewen Arnold, of Tormarton, exhibited four highly useful sheep, but were not long in competition with others we presume, as their proportions were below the average before us. Mr. Edw. Handy shewed three in this class, one of which was obliged to be removed, owing to injuries received in transit to the show. He appeared, as he lay, a very fine animal, and we were assured by Mr. H. that he was the best of his three. Mr. T. B. Brown exhibited four very superior animals, No. 603 receiving a commendation. He is long in frame, with an exceedingly good top throughout, and his head is fashionable and well set to a fair neck; his wool is a broad set staple, and heavy; his girth is good, attaining full 5 feet. Mr. Thomas Little showed one, and Mr. John King Tombs five, in this class. Our only remark in passing was that, though highly useful, we could make no especial notice beyond commending the head of No. 609. Mr. Fletcher exhibited three, one of which, No. 610, received a high commendation. His girth equalled the second-prize sheep, *i.e.*, 5 feet 3 inches; his whole frame and excellent proportions highly pleased us—he is a noble animal in his class. Mr. W. Hewer brought forward four splendid sheep, No. 616 receiving a commendation. Had his neck been somewhat shorter and thicker, and back less rounding, he would have stood very high in his class; as it is, he is a capital animal. No. 613 we greatly admired—capital shoulders and chine, thick in frame, and deep throughout. Of Mr. Lane's two prize sheep we have already spoken, but the remaining three deserve our special praise for their extraordinary beauty and uniform proportions, great and good in every resprct, and of the genuine character of his flock. Mr. John Lane showed four useful sheep, but we have no especial mark in their favour in our note-book. Mr. T. Porter's other sheep deserve favourable mention, but do not equal his 628. Mr. W. Garne exhibited five, No. 634 receiving a high commendation. He has excellent plaits; is a truly well-formed sheep, with a level fat back, fair rump, and good chest; his girth fair, 4 feet 10½ inches; his flank is light, and thighs not good; wool fair, and of good quality. His whole lot showed well, stand high, and possess good looks and majestic frames, quite in keeping with his well-esteemed flock. Mr. W. Smith's are useful sheep, but our note-book does not take any especial entry. Mr. E. Ruck stands with us in the same position; but both are worthy of favourable mention. Why the whole class did not receive a general and high commendation we cannot divine—we never saw it surpassed.

In *Class* II., *Rams of any other Age*, we would speak in still higher terms; such a lot of beautiful sheep of such enormous proportions were surely never seen together before, at any one time. Their size and grandeur of appearance astonished every beholder; they are the giants of *Ovis aries*, or domestic sheep, and no mistake. We should like a series of experiments to be instituted, to satisfy the public mind as to what class of sheep are most profitable to breed for the benefit of the community. If such immense animals as we saw in the last class, and such wondrous ones as we see in this, can be bred and fed to this weight of mutton and wool in so short a time at a moderate expense, it ought to meet with every encouragement, and John Bull may rest assured his people will not lack good mutton. This is the food of the common people more especially, and we require a large supply of it. Which, then, is the best and surest way to get it? Are these sheep good breeders? Do they consume enormous quantities of food to bring them to a marketable state? We want to promote the breed best adapted for public service—which is it? In this class Mr. E. Handy takes the first prize with No. 639. He is not so majestic or handsome as some others, but he has all the qualifications of a good animal of the highest class. His good proportions are general; and take him where you will, and criticise every point, you find him correct. To begin with him, he is 5 feet 9 inches in girth, and 4 feet in length. His head is good, but not fine, nor does his looks quite please us; but such a head to such a neck is often seen. The breadth takes from its length, and the shoulders fit so compactly to it that it gives him a common appearance, while in fact the proportions are of colossal dimensions; his ears are possibly a little too short; take his neck vein and breast, what can be better? then his chine and plaits, how full, regular, and even! take the depth through him at his chest, it is unequalled in the yard; continue along his back, it is firm in flesh and deeply covered; his ribs stand out well, and loin and hips all right, and ensuring a true form in flank and lesk; then his rump is exceedingly good, nothing preposterous, but broad, well-formed, and heavy, his thighs and flanks well loaded, his wool heavy, and if he has a fault, it is in his offal; his legs are coarse and unsightly, but his extraordinary weight would give some reasonable explanation of this defect. Mr. Handy's No. 638 is a very good sheep, and in character with Mr. H.'s flock. Mr. T. B. Browne exhibits some extraordinary animals in this class. His Nos. 640 and 641 are highly commended, and are two of the best sheep in the yard; but all cannot receive the prizes. They are very beautiful, possess extraordinary plaits and deep chests—forms all you can wish, with plenty of good wool. Mr. Smith's are good sheep, but not equal to the above. Mr. G. Fletcher receives a commendation with No. 645, the highest and longest sheep in the yard; but notwithstanding this, his general form is excellent; his rump is good, and his wool extraordinary for weight and quality; his girth is 5 feet 6 in. Mr. W. Hewer's No. 647 is a very good sheep, exceedingly large, but compact in form; his girth 5 feet 9½ in.: he very properly received a high commendation. Mr. Wm. Lane's aged sheep are tremendous specimens of the breed; his No. 652 possesses the greatest girth of any sheep coming this year under our tape, namely 5 ft. 10½ in., nearly equalling the largest girth on record; the neck is defective, and the back and shoulders, astonishing as they are, do not quite equal some others in their even outline and fat covering. No. 653, though not quite so full in girth as No. 652, is of most excellent quality of flesh; he has a beautiful bosom and full plaits, and his whole girth is well formed and full, but his shoulder is not fully covered; his back is very fat and firm; thighs, twist, and flank light; countenance and wool all right: he received a high commendation; girth, 5 ft. 9½ in.; an extraordinary animal, and worthy of a prize. Mr. W. Garne exhibits two very prime animals; with No. 655 he takes the 2nd prize of £15. This sheep is exceedingly large in all its proportions, with an extraordinary back for fatness; its depth of flesh is very great, but rather too flabby for our taste; he is more noble-looking than his successful competitor, and his proportions are very uniform and good throughout; he stands high and well, with plenty of superior wool; his girth 5 ft. 8 in. His No. 654 is a very good animal, with head equal to the fine Leicesters, deep in chest, and of beautiful form throughout; girth rather slight, 5 ft. 6 in. Mr. Howell's No. 656 received a commendation, and deservedly, for his large well-formed frame; his mutton rather loose in hand. Mr. T. Walker received a high commendation for a very fine hind-quartered sheep, with famous rump and thighs; girth moderate 5 feet 6½ in.

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* The reserved sheep is named in every class to take rank, should either of the prize animals be disqualified.

In Class III. some splendid and very handsome animals were shown. Mr. Garne's prize pen of ewes are of uncommon size, beauty, and proportions. Mr. W. Lane's come next, and match so well that they appear to be from the same flock; received 2nd prize. His No. 673 took the third position, or the reserve pen; these were more to our taste, as denoting more staple in wool, though not quite so large in frame—Highly commended. Mr. W. Hewer received a high commendation for a very compact well-formed pen, all broad expansive frames, and full throughout. Mr. T. B. Browne's two pens received commendations, of which they were fully worthy. The other pens were very commendable, but our note-book is silent as to quality.

Short-woolled Sheep not Southdowns. — Perhaps the remark we made in speaking of the Leicester class may not be altogether inapplicable here, but in a different sense. There we implied that the breed appeared to decline in public favour, owing to its diminutive size. In this class we have a proof of it. The pure Southdown has long, by common breeders, been thought too small for profitable grazing, and the larger varieties of short-woolled sheep have been gaining in public favour. The Shropshire-downs have for several years stood high as a distinct breed: they are very prolific breeders, and they fatten upon very moderate food; their shape and form being of just proportions, and they yield a good fleece of fine wool. The Hampshire-downs have also established themselves as a distinct breed, and although we cannot admire their frame or their looks, we know they are profitable animals for the grazier and breeder. The meeting is this year held in a district where they abound, hence they form a prominent and very interesting feature in the show-yard. They have also the double advantage of having a special class for themselves, and being permitted to compete for the Society's premium, at the same time, as given to short-woolled sheep. The number in these classes is very large, comprising about 65 shearlings, 46 older sheep, 35 pens of five ewes, and 15 pens of five ram lambs—a long task for judges.

Class I. *Shearling Rams.*—Mr. Adney, of Harley, Salop, gains the prize for a very level well-formed original Shropshire ram, with particularly good chine and rump. Mr. Humfrey's second prize ram is very good; and also takes the first prize as a Hampshire-down. Another of his shearlings is second in the special class for Hamphire's. Mr. Druce, Mr. George Adney, Mr. Orme Foster, and Mr. Spencer show some very fine rams in this class. One of Mr. Gillett's is of very great size. The Earl of Portsmouth has one of great length, wide chest, and many admirable points. We observed several very defective at the shoulder.

Class II., *Rams of any other age.*—Very good indeed, containing many exceedingly fine animals. Mr. Meire's prize ram, extraordinarily good; Mr. Adney's second prize Shropshire, very large and good; Mr. Humfrey's prize Hampshire, very level, compact, and fine; Mr. Rawlence's Hampshire has an immense fore-quarter; and Mr. J. W. Brown's is wondefully wide and level. We particularly admire Mr. Mountain's Down and Cotswold, and Mr. J. Shittler's Hampshire rams, bred by Mr. Futcher.

Class III. *Shearling Ewes.*—This very large class has some very beautiful animals, particularly the prize pen of Mr. Canning, the second prize pen of Mr. R. Shittler, and those of Mr. Pain. Among the sheep entered only for the special Hampshire Down prize, we think the prize pen of ram-lambs of Mr. Pain and Mr. Coles are extraordinary beauties, and several other pens are very fine. Some of the shearling ewes are also remarkable for their size, symmetry, and handsome looks. From the superior character of these sheep, we are not surprised to hear large dealers say they are most profitable in every respect.

PIGS.

The following is the number of pigs shown at the last six meetings:

Meetings.	Large Breed.	Small Breed.	Total.
Lewes........ 1852	48	96	144
Gloucester 1853	38	108	146
Lincoln 1854	45	92	137
Carlisle 1855	29	55	84
Chelmsford.... 1856	35	69	104
Average of 5 years ..	39	84	123
Salisbury 1857	65	121	186

This is the best show we ever recollect seeing, and it is difficult to say which classes come up the best, whether of the large or small breed. The show is generally commended, but having devoted so much space to the cattle and sheep, we must be brief in our notice of the pigs.

Class I.—Boars of a Large Breed.

Mr. Harrison's prize boar, bred by Mr. Carswell, is a very fine animal; and also Mr. Tuley's second prize boar, bred by Mr. Leake. We mention, as especially good, Mr. Blandford's, Mr. Sadler's, Mr. Squarry's, Mr. Hewer's, and Mr. Fisher Hobbs's boars.

Class II.—Boars of a Small Breed.

Mr. Mangles, the Earl of Portsmouth, Lieutenant-Colonel Towneley, and Mr. Horsfall, are here very great; but the Rev. F. Hodson, Mr. Scott Hayward, the Duke of Beaufort, Mr. Marriott, and Mr. Crisp, exhibit some remarkable beauties. In this admirable and wonderfully fine class Mr. Fisher Hobbs shows a number of animals of his long-celebrated black breed; which, though unsuccessful in the opinion of the judges, are evidently considered as of first-class character by the public. They certainly are greatly improved in size from what they once were, without losing any of their finer qualities; yet, as we understand, they have been bred in-and-in for more than twenty years.

Class III.—Breeding Sows of a Large Breed.

A very good class. Mr. Hewer's Berkshire sow, no less than 5 years and 4 months old, takes the prize—a very fine and handsome animal. Mr. Harrison's second prize sow is very large, and of very superior quality. Mr. Rawlence, Mr. Horsfall, Mr. Bowly, and Mr. Palmer, show some remarkably well-proportioned and handsome sows, and Mr. Calvert's is of wonderful length.

Class IV.—Breeding Sows of a Small Breed.

This class is very large, and the animals are of such rare merit that we think the judges quite right in awarding to it a special commendation. Mr. Watson's prize white sow is a beauty; and we can find no fault with Mr. Crisp's second prize black sow, which is admirable, both for her splendid proportions, delicate bone, and fine hair. Mr. Mangles's sows are especially commendable; as also Mr. Scott Hayward's, Mr. Hatton's, Mr. Grove's, Mr. Palmer's, and more particularly Mr. Turner's (commended), which is an extraordinarily good one. Mr. Fisher Hobbs ornaments this class with a number of sows of his black breed, which, though large, as well as of beautiful quality, do not seem to meet the taste of the judges.

Class V.—Pens of Three Breeding Sow Pigs of a Large Breed.

Amongst a number of first-rate pens, we find that of Mr. Morland wonderfully good; the animals perfectly level in character, and very thick, compact, and fine. Mr. Ashton, Mr. Blandford, and the Rev. G. Baily, are great in this class.

Class VI.—Pens of Three Breeding Sow Pigs of a Small Breed.

This is indeed a splendid collection of good ones. Mr. Watson's "We," "Must," "Win," are good, but very fat. Mr. Scott Hayward's are admirable in every respect. Mr. Mangles and Mr. Riddell have some splendid specimens of Yorkshire and Suffolk breed. The Duke of Beaufort shows three little beauties, and those of Mr. Druce and Mr. Palmer have also some great excellence.

Several pigs died before the show opened; one of which, a very fine Yorkshire sow, the property of Mr. Wainmam, expired on the station platform at Salisbury. She was entered in Class 3, and sister to the sow that took the premium in that class at Chelmsford.

POULTRY.

The number of poultry exhibited at different meetings appears in the subjoined table:

Meeting.	Fowls.	Turkeys.	Geese.	Ducks.	Total.
Lewes 1852	58	1	5	11	75
Gloucester 1853	229	7	25	31	292
Lincoln...... 1854	245	7	11	32	295
Carlisle 1855	156	0	5	24	185
Chelmsford .. 1856	162	1	0	21	184
Average of five years	170	4	11	24	209
Salisbury 1857	127	4	5	20	156

The meeting is in a good poultry district; but the season renders beautiful as well as perfect plumage impossible; so, making allowance for this in judging the appearance of the birds, we think the show a very superior and successful one, though the number of pens is rather short.

Special commendations have been awarded to the Dorking chickens, the older Dorkings, and to the Cochin China chickens. We have never seen finer birds of their age than those of Capt. Hornby in the two former classes, or those of Mr. Fowler in the latter. Mr. Botham, Mr. Loder, and the Rev. T. L. Fellowes have also most excellent pens. Capt. Hornby is also chief in the Dorking cock class, and Mr. Fisher Hobbs also stands well here. The Spanish fowls are very good. The class of Cochin China fowls of more than one year old is highly commended; Mr. Fookes's pen being extraordinarily good. In the game fowl class, which is highly commended, Capt. Hornby is again triumphant: in the class of game cocks he is beaten by Mr. G. C. Adkins. The Hamburgh golden-pencilled fowls are particularly good. Among geese and ducks Mr. J. H. Fowler is the principal prize-taker; and the entire class of Rouen ducks is pre-eminent for size and beauty.

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In concluding our survey of the stock classes, we can only hope that our notices of commendation may be useful in directing attention to many animals, herds, and flocks that do not appear in the prize-list, and that our deprecatory comments may operate by way of advice wherever they may have been let fall. We have endeavoured impartially to state our impression of each noticeable animal as we passed through the classes, without of course staying to dwell upon every good or deficient point which might meet our eye or become palpable to an examining touch. We beg that no one will judge us harshly for our free criticism, or feel hurt by the omission of his particular name and address.

REPORT ON THE IMPLEMENTS.

The figures in the following table indicate the number of makers of each description of implement, together with the number of different varieties observable among the miscellaneous articles:

Articles.	Lincoln, 1854.	Carlisle, 1855.	Chelmsford, 1856.	Salisbury, 1857.
Steam ploughs, or cultivators	—	4	6	8
Drills	30	14	18	23
Manure distributors......	9	3	5	13
Horse hoes....	21	10	24	26
Hay machines..	4	6	10	11
Horse rakes ..	14	8	17	22
Reaping or mowing machines	12	9	5	12
Carts and waggons	28	14	33	34
Ploughs	27	19	23	26
Subsoilers	17	8	10	8
Cultivators, &c.	25	23	28	20
Clod-crushers & Rollers	24	17	25	18
Harrows......	16	9	17	19
Draining tools .	4	1	8	7
Thrashing machines	26	21	33	31
Corn - dressing machines....	24	18	31	31
Chaff cutters ..	33	22	46	37
Linseed crushers	20	14	25	15
Turnip cutters, &c.	18	20	32	30
Oilcake breakers	20	12	23	16
Churns	12	7	10	10
Brick and tile machines....	11	7	9	5
Steam engines..	24	18	31	28
Traction engines	—	1	1	4
Miscellaneous..	442	336	602	527
Total	861	616	1,035	881
Exhibitors	130	118	147	154
Entries of "New Implements".	101	107	102	180

By looking at the above figures, it will appear that the numbers of makers of each description of machine or implement do not materially vary, from one year to another. The numbers of each kind of machine, however, are not shown in the table, and vary according to the number shown by each maker. Thus, in the class of drills, 23 manufacturers are represented; but the actual number of drills in the yard is no less than 107. Of steam engines there were last year 84; this time we have 78, portable or fixed. And the thrashing machines include 26 for thrashing only, and 40 for thrashing, shaking, and dressing, or 66 altogether. Of ploughs there are 137, shown by 26 makers.

We propose to notice first those implements for which prizes are awarded, after examination and trial—namely, such as are employed in the sowing, manuring, tillage, cleansing, and harvesting of crops; and then allude to the more noticeable objects of interest distributed throughout the different stands.

STEAM-PLOUGHS AND STEAM-CULTIVATORS.

It often happens that the most promising of all inventions are heralded in the catalogue only to disappoint us by their absence from the showyard. Last year we had an entry of a rotary cultivator, which has never yet made its appearance. At Salisbury we were led to expect several steam-tillage inventions, which failed to present themselves in the field. Perhaps these entries are valuable, as showing that many minds are actively engaged upon this great question, of whose labours we should otherwise be ignorant.

On proceeding to Stand No. 32, we were disappointed at not finding the steam-digger of Mr. H. W. Ford, of Gloucester, manufactured by Messrs. Barrett, Exall, and Andrewes. The catalogue tells that the digging implement "is attached to and worked by a locomotive engine (a portable one being easily adapted). The spades or forks are arranged in long rows, held in a revolving frame, and are used in a manner precisely similar to that of manual digging. Under average circumstance 6 acres a-day can be dug 12 inches deep; only two attendants are required. Price £400." Here, indeed, must be something like the machine we want; but sanguine people must restrain their curiosity for the present.

Nor was Messrs. Holmes and Sons' (of Norwich) traction-engine present, which has ploughs attached, ploughing two furrows on the flat or in stetches. Price, with 4 ploughs £155.

Equally in vain did we look for the steam-cultivator and traction-engine of Messrs. I. and R. Blackburn, of Long Eaton, near Derby. We are told that "this locomotive consists of a drum 8 ft. 6 in. diameter, and 5 ft. 6 in. wide, made of plate and angle iron; in the inside of which is suspended a pair of horizontal high pressure engines of 12-horse power, with a vertical multitubular boiler. The engines are coupled, and upon the main shaft is keyed a wrought-iron pinion, driving a spur internal-geared wheel of 8 ft. diameter, which is bolted to the inside of the drum. The machine is guided and turned at pleasure. Price £460." It is adapted to travel on common roads; to roll land, grass, or arable, and is an efficient clod-crusher. We much regret the absence of this new version of an old idea.

On Messrs. Burgess and Key's stand we had expected to see the steam-ploughing machine or cultivator of Messrs. H. H. Fulton and F. B. Etty, of 8, Great Queen Street, Westminster. It is described as having "a very strong and light boiler, with large heating surface; it has also broad driving-wheels. There is a chain-wheel, over which a chain, anchored at each end of the field, is passed once round; this wheel being driven by the engine assists the traction. The ploughs are attached to a frame at each end of the machine, thereby obviating the necessity of turning at the headlands. It is capable of being used for traction on common roads, and for thrashing and other farm purposes. Price £500." The idea of causing a locomotive to haul itself along by means of a fixed chain, after the fashion of a ferry-boat, was patented some years ago by Sir J. Scott Lillie: we suppose one of the chief merits of this machine would consist in the lightness of the boiler and engine.

Mr. Romaine's steam-cultivator was to have appeared upon Crosskill's stand, but we believe it could not be completed before the time of the show. We suppose it is a "new and revised edition" of the famous rotary cultivator, introduced from Canada by Mr. Mechi; and as the inventor has now had a long period for meditating and trying improvements, we hope he will soon be in the field with a practicable application of the correct principle of "revolving tillers for steam-power." The price stated is £600.

Mr. Eddington, of Springfield, near Chelmsford, was to have exhibited his pair of windlasses and ropes for steam-cultivation, manufactured by Wood and Son, of Chelmsford. The windlasses are so arranged that they may be worked by a common portable engine, and both the windlass and engine move together along the headland. Price £350. This seems very much such an arrangement as would be economical of power, convenient to work, and not ruinously expensive.

Messrs. J. and L. Horsfield, of Bank Foundry, Leeds, were to have exhibited their steam-cultivator, consisting of "a 7-horse power portable steam-engine, with windlass, 1,300 yards of wire-rope, 800 yards of wire-cord, 8 anchors, 4 guide-pulleys, 20 small sheaves, 2 twitch-screws, 6 coupling chains, 12 rollers, 2 screw-jacks, 1 waggon for conveying windlass, rope, anchors, &c., with portable crane, 1 frame with four plough-heads, fitted with raising and lowering gear. Price £380." Here, at any rate, would be plenty for the money. It is much to be regretted that this apparatus did not appear, as it seems to be of a similar character to Mr. Fisken's simple and admirable machinery, which was shown at Carlisle. However, we can only guess at its character; and if it works four ploughs at once, and costs only £380 with the engine, it must be amazingly cheap.

Mr. W. Bray, of Folkstone, did not get to his place with the traction-engine, having Barron's patent boiler. The wheels, it is said, "have teeth or blades, which enter the ground, and obtain a firm hold; and these are made to slide in and out, so that they clear themselves of the soil; they are also capable of adjustment to run well on hard ground, for carting, and for general farm work. To the engine is attached a set of pumps for filling the tank, which may be used for distributing liquid manure, or employed as an efficient fire-engine. Price £550." A plough-frame of the same inventor ought also to have been present. It is "made to carry a number of ploughs, and is so arranged that when turning the furrows to the right or left, half the ploughs are raised from the ground by means of a lever; this arrangement being necessary, as the implement is intended to turn with the traction-engine at the headlands. It is supported on two wheels behind, and connected, by a beam in front, to the engine. Price £150."

But there is also another steam plough which was promised us as among the models, but could not be found. This is the locomotive steam plough of J. Austin, of Millisle, near Donaghadu, County Down, manufactured by Chaplin and Co., Glasgow. It is to be "so constructed as to plough three to six acres per day, requiring only from 4 to 8 cwt. of coals, according to the power of the engine. Being locomotive, it draws itself and plough to and from the field, and all its work can be done by the superintendence of *one* man. The engine is also applicable to all other usual purposes. Price £250." If this be a true statement of the capabilities of this invention, we can only say, let us have it manufactured at once; and there will be an immense and immediate sale for so cheap and economical a machine.

Whatever may be the merits of these ten inventions, entered but not exhibited—and we include them in our notices only because of the general importance of the subject—we have several traction engines, ploughs, and cultivators subjected to an actual though unfortunate trial.

Mr. Cambridge exhibited in the yard an eight-horse power engine, made self-propelling, so as to serve for drawing implements on arable land, as well as taking machines or heavy loads along common roads. The hindmost travelling-wheels are both driven by means of spurwheels affixed to them, gearing with pinions actuated by the engine crank-shaft, the fore-wheels turning on a transom, and being steered by a wheel like that of a ship. For traversing soft or rough ground, or up and down hill, "a portable railway" is employed; this did not appear, but we believe it consists of an endles rail somewhat resembling Boydell's, with the shoes or rails hinged together. Price £500.

Mr. Lee, of Wolverhampton, has a portable engine, which by means of two riggers, and a pinion gearing into a spur wheel on the axle-tree of the hind-wheels, propels itself along. It will draw behind it a weight equal to 6 tons up an incline of 1 in 17, and is guided by a fore-carriage steerage. It is fitted with reversing motion and tank. Price £235, or without the self-acting movement £210.

Mr. Burrell, of Thetford, has patented a remarkably simple method of making ordinary portable engines locomotive by means of Boydell's endless railway. The seven-horse engine shown has the rails attached to the wheels, and the propulsion is effected by a pinion on one end of the crank-shaft driving a chain-wheel affixed to one of the hind travelling-wheels by means of an endless pitch-chain. At a very reasonable expense, this simple contrivance may be added to any portable engine now in use, and so enable it to travel of its own accord from place to place, dragging a thrashing machine after it, or the same engine might drag two or three ploughs or carts, &c. However, except in a very level district, we should prefer having a locomotive purposely manufactured, as there must be considerable danger in working common boilers up and down hill, which have but little water-space above their tubes.

Mr. Boydell's traction engine or steam-horse is manufactured by Mr. Burrell, and is similar to the one exhibited last year, only better constructed. Descriptions of this invention have repeatedly appeared in our columns; but we say, in a word, that it consists of a portable engine, with tubular 10-horse boiler, two 7-inch cylinders, each of 1 foot stroke, reversing motion, 4 feet fly-wheel, water tanks, steerage, and gear work for driving (with two speeds) one of the hind carriage-wheels; weighing, with water, about 10 tons, and being nearly 30 feet long from end to end. The hind wheels are of 6 feet diameter, the fore wheels smaller, all fitted with the endless rails; and the steerage is effected by altering the "lock" of the front wheels with a short coach-pole, worked by chains and a wheel, like the rudder of a ship. There is also a screw for further adjusting the level of the boiler to different gradients. The rails are not only laid down before each wheel, and taken up behind it, but being loose and disconnected with each other, allow the wheel to alter its direction with facility; and being jointed, so as to admit of angular motion sideways, can accommodate themselves to a transverse as well as longitudinal inclination of ground. We saw this engine ascend an incline of 1 in 7, drawing up a water-tank, &c., weighing many tons. It pulled three 2-furrow ploughs at the pace of two miles per hour, working six inches deep in difficult stony ground; it dragged with still greater ease a cultivator 8 feet 6 inches wide with 11 tines (manufactured by Coleman), making deep and effective work; and passed over soft, stirred land, scarcely sinking in at all, and not unduly pressing it. The price is £630.

Mr. Burrell's plough, constructed with two shares and mouldboards in one frame, and with levers for raising and depressing the wheels at the front end of the beams, are not quite manageable, and are at great disadvantage from having no steering apparatus, by which the ploughman might direct the width of the furrow. Even with single ploughs, the operation of turning is very awkward; indeed, we cannot believe that steam-ploughing ought to depend on manual labour for holding the implements, and feel no doubt that a ploughing machine will soon be found successfully coupled with the traction engine. As it was, five men were needed to work the engine and double ploughs.

Messrs. Burgess and Key are the exhibiters of the traction engine invented and manufactured by Mr. Collinson Hall and Mr. T. Charlton, of Navestock, Essex. This novel-looking locomotive has the appearance of two horizontal cylindrical boilers of small diameter, placed one a short distance above the other, with the engines and machinery between them; these boilers being united at one end by an upright cylinder containing the fire-box, and also having communication by upright pipes at two other points along their length. The tubes are in the lower boiler, and the water level is high enough to rise within the steam-chest (or upper boiler), so that there is no possibility of the tubes being left uncovered upon any slope of ground. There are two horizontal cylinders, reversing-motion, &c., and a water-tank underneath the boiler. Both the hind-wheels, of about 5½ feet diameter, are driven by means of spur-wheels and pinion, gearing with a pinion on the crank-shaft; but, for convenience, the motion is transmitted by an intermediate shaft and spur-wheels, which might perhaps be avoided in future machines. By driving both the travelling wheels, the greatest amount of "bite" or hold upon the ground is obtained; and this is still further augmented by purposely weighting these wheels with metal, and so obtaining a rolling weight, which does not increase friction. Boydell's rails are attached to the peripheries; and it is indeed only by the help of this admirable invention that any traction engine can haul a load over arable land or up steep inclines. The engine itself is enabled to be very light, while of great power—that is, of about 7 tons weight, we believe, with water, and yet working up to 50 or more horse-power, by employing the enormous pressure of 300 or 320 lbs. per square inch. There is a fearful explosive force in such an engine as this, and it will be some time before farm-servants can be trusted to keep one in order; but Mr. Hall assures us that he has worked the engine for three years in thrashing and travelling from place to place with the machine, without any damage whatever. The boiler is of very small diameter (only 22 inches), and has been proved by cold-water pressure up to 700 lbs. per square inch, and every part of the engine is made of the necessary proportionate strength. We understand the consumption of fuel is unprecedentedly low. There is an appearance of complication about the numerous pipes, cocks, and mechanism; but the whole machine is in a compact space, being about 20 feet long. The steerage is effected by a wheel and screw, which (regulated by a rod from the back of the machine) alters the lock of the front wheels. Owing, however, to the small size of the wheel and a want of sufficiently rapid command over the movement of this steerage, the engine met with some unfortunate accidents and stoppages. Ascending the hill to the trial field, and drawing one of Mr. Fowler's ploughs, it fully showed the value of having so much motive-power in a small compass. Mr. Hall proposes to work a plough-frame without turning either implement or engine round at the headlands: he simply traverses backward and forward, alternately pulling and pushing the plough. Thus, much time will be saved. The price of this locomotive is £700.

In leaving the subject of traction engines, we would say that the practicability of ploughing by a locomotive engine much more cheaply and rapidly than by horses ought now to be considered as proven; while the chief difficulty in the way of digging-machines and rotary tilling has also been removed by the ease with which the "endless rail" carries a steam engine over the land. The damage to the engine does not seem likely to be excessive, and the wear of the rails simply demands careful lubrication. The only question with purchasers will be whether traction engines cannot be constructed in a better form than at present; and we hear of at least two improvements in this point. One manufacturing firm is making an exceedingly compact engine, in which almost all the weight rests on the two large hind-wheels, while only one steerage-wheel is placed in front; and both the large wheels are driven by gear-work from the crank-shaft, allowance being made for their different velocities in traversing curves by means of friction-boxes. A patent has also been taken out for an ingenious application of the peculiar bevel-wheel movement of the chronometric governor to this actuating of both wheels.

We now come to the system of hauling by wire ropes, and give it as our opinion that the hauling and locomotive principles are now competing so equally, that, in all probability, one will be found best in certain districts and for particular purposes, while the other will also be in like request under different circumstances and conditions. Though the traction engine can ascend steep inclines and travel over rough fallow, such an application of it cannot be economical of power; and, on the other hand, for moderately level surfaces, the choice will most likely be in its favour in preference to dragging by ropes.

After the experience of a steam-culture trial last year, we had expected the Society to be fully prepared with suitable land, and ready with every arrangement for serving out certain quantities of coal, testing the draught of the implements by powerful dynamometers, and measuring the extent of work done. But no such complete trial seems to have been attempted; and the steam ploughs were set to work in a field which only the most skilful driver could get into, through the stunt uphill gateway of 8½-feet opening; which was so lofty and steep as to be too severe a strain to the equilibrium of novel machinery most at home on level ground, and which was of two strong and impracticable a quality to be tilled when the engines had achieved the miracle of climbing to it. No wonder therefore that in place of accurate computations of outlay expended and work performed, the only reliable conclusion we have is, that steam ploughing can be effected possibly at less cost than by horses; and that while the wire-rope methods are best for some purposes, a steam engine can be usefully employed as a locomotive on farms and fields.

Mr. J. A. Williams, of Baydon, Wilts, showed his system of employing ordinary portable engines for hauling implements. A windlass on travelling wheels is attached to an engine by means of a timber framing which incloses it like a pair of shafts, braced so as to make one steady machine of the combined engine and windlass, and yet so that the coupling-pieces are easily unfastened and the frame removed. The windlass consists of only one drum, which is driven by a cog-wheel, pinion, chain-wheel, and a short pitch-chain gearing with a pinion on the engine crank-shaft; and by means of another pitch-chain and a barrel winding up a rope anchored a-head, the whole machine is made to progress slowly along the headland. A water-tank and coal are carried upon the windlass-carriage, which thus serves as a "tender" to the engine; and the weight makes it a capital anchorage to resist the side-strain of the plough-rope. Two engines with their windlasses are used, one at each end of the field, alternately drawing the implement up and down: these being ordinary single-cylinder engines, one of 7, the other of 6-horse power, and weighing with windlass about 3½ tons each. This arrangement is very excellent; being as it is, or rather if with only one engine and an anchored pulley, just the simple inexpensive plan required by the farmer. The price of each hauling machine, without the engine, is £120. Mr. Williams's weakest point is in the ploughing implement, or the manner of working it. Being of opinion that each plough must be hung on a lever and be capable of instant adjustment independently of the rest, he has six ploughs arranged with a complication of joints, slots, guides, chains, barrels, and handles underneath a strong timber frame of triangular form about 16 ft. in length; and each plough has a separate draught rod. The ploughs are lowered or lifted in succession, just as drill coulters are, so as to enter and leave their work square up to the headlands. But he is obliged to have a horse between a pair of shafts to steer the machine; and by attempting too many furrows at once, requires also another horse to follow, dragging out the slack or return rope. Altogether, six men and two horses are required for the work. A cultivator is also worked in the same way, doing 12 acres per day. The engines are able to propel themselves from field to field, by driving their travelling-wheels with a pitch-chain, and are steered by the horses above-mentioned; but could not ascend to the trial field without the help of three or four horses each.

Mr. John Fowler (of 28, Cornhill, London,) has given up the stationary engine, and now shifts both the engine and anchorage along the headlands. Instead of temporarily attaching a windlass to the engine, he mounts the engine permanently upon a frame, with gear-work and drums beneath the boiler, thus making a very heavy machine. He employs either one engine and an anchorage with a single implement for one-way ploughing, or two engines with two implements for ploughing in lands or stetches. Three engines were exhibited, somewhat differing in construction. The 10-horse engine, with double cylinder, working at 60 or 70lbs. pressure, weighs altogether about eight tons. It is mounted upon a timber frame on four wheels, the hind-ones of about 5½ ft. diameter, with broad tires; the front-wheels turning on a transom for steerage, and a vertical screw being used to adjust the level of the boiler. The crank-shaft gives motion by mitre-wheels (with reversing clutch) to a vertical shaft supported by a bracket on one side the boiler; and a pinion at the lower end, gearing with a spur-wheel, turns another intermediate spur-wheel situated between the two drums which are on upright axles underneath the boiler, the last spur-wheel being put in or out of gear with either drum, by being shifted on a moveable arm. The drums are carried by a light framing which comes down within 10 inches of the ground. For travelling backwards or forwards along the headland or on common roads at the pace of two miles per hour, there is a horizontal shaft geared by bevel-wheels at one end to the main vertical shaft before-mentioned, and having a pinion at the other end taking into the teeth of a cog-wheel on one of the carriage-wheels. For working steep gradients, the engine coils up a rope anchored a-head. The 12-horse engine is "self-contained," the machinery being affixed to the boiler without a framing; the weight about 8½ tons. There is only one intermediate spur-weeel between the main vertical shaft and the drums. There is separate reducing-gear from a pinion on the crank-shaft, for driving the carriage-wheel axle; and by means of an arm on the axle and blocks or cogs on the wheels, both carriage wheels are actuated, thus obtaining a firmer hold on the ground than when only one side is driven. For creeping slowly along a headland, there are ratchets winding up a rope. The 8-horse engine has a single cylinder, and drums underneath; but the carriage-wheel is driven by a crown-wheel and a cage-pinion on the main vertical shaft.

The rope used is about ⅝ths of an inch thick, made of steel wire; and is held off the ground by friction-rollers mounted upon barrows, or by new self-shifting rope-carriers, each consisting of a wheel with a long hollow axle through which the rope runs. The anchorage is a low truck with sharp-edged wheels that cut into the soil, and the sheave round which the rope passes gives motion (by ratchets, wheels and a screw) to a barrel winding up a rope anchored a-head, and so propels itself very slowly along the headland. The implement is Mr. Fowler's well-known and most efficient frame of ploughs in two sets, balanced upon a pair of wheels, readily steered by regulating the lock of the axletree, adjusted to different depths by screws, and now made so that the ploughs can be set to different widths of furrow. The work we saw was very well done, considering the objectionable nature of the land; the cost is estimated at considerably under that of horse-labour. Four men and a boy are engaged, and a horse and man to fetch water; but by adopting the "endless railway," a day's supply of water might be drawn to the field with the implement and all the tackle, much more easily than at present. The price of the 12-horse engine and apparatus is £825; of two 12-horse engines and two implements (without anchor), £1,500; of the 7-horse engine and apparatus for a smaller plough, £600, or with two engines and implements, £1,075; and the price of the 10-horse engine only (with self-contained windlass) is £360.

We appear at last to have obtained steam-ploughing machinery *perfectly independent of horses*. This is the great fact of the Salisbury Meeting; and we must look for the few improvements which seem wanted, in combining the best features of different schemes, and adapting say common portable engines for the farmers, and the more powerful and ponderous machinery for men who will let out on hire.

REAPING AND MOWING MACHINES.

We shall be very brief here, having already described the trials, and published the report of the judges; our notices being descriptive of the machinery rather than of the merits, which have already appeared. Mazier's French reaper did not meet with much approval; though the method of turning over the cutter-bar on an arm, so as to be on either the right or left side of the machine, is ingenious and useful, when the "lay" of the crop requires it to be cut all one way.

Lord Kinnaird's is M'Cormick's with an endless-web side-delivery; price £21 10s. It has been extensively used, and found to work exceedingly well.

Dray and Co.'s "Hussey," price £26, has the advantage of being the smallest, compactest, and lightest machine hitherto employed in this country, the weight being only 9 cwt. The acute skeleton knives are very excellent; the travelling-wheels allow the height of the cutters to be easily regulated: there is no reel to collect the corn in front; but the tipping platform facilitates the delivery of the cut corn in bundles, so that no after-gathering and unavoidable scattering are required, and it will cross ridge and furrow without difficulty. However, notwithstanding its proved merits and extensive employment, we approve the sanction of the judges awarded to the principle of an automatic delivery apparatus, in preference to this, which is laborious to the man who wields the rake. What mechanism can do without complication ought not to devolve upon the labourer's strength. The Union reaper, invented by Mr. Palmer of Stockton, has a curved platform, so as to deliver the corn out of the next track of the horses, and thus obviate the necessity for immediate removal of the sheaves. But in this machine we have not even the tipping platform, and only a partial attempt at delivery by rollers to ease the labour of the rake-man.

Crosskill's reaper is propelled from behind, as Bell's original one was; so that it can charge into a crop in any direction, and there is no "side-draught" as in other machines. Serrated cutters are employed, and the cut corn is laid by the reel upon a slanting platform, off which it is swept in a continuous swathe by endless bands having cogs upon them. These belts will pass either way, delivering on whichever side is most convenient, and so enabling the reaper to traverse up and down instead of round the field. The width of the cut is 6 ft. 9 in.—too much, we think, for two horses; the price, £42.

Messrs. Burgess and Key's reaper, with M'Cormick's cutters and their own screw-roller platform, and having a 5 feet 6 inch cut, is of much lighter draught than any of the preceding. The delivery is very good; and since last year a very important improvement has been made, namely, instead of the divider-board, a conical screw-roller projects into and separates the portion of corn to be cut from the upstanding or lodged crop. The machine is very broad, and of large dimensions, and a little scheming is required to take it through an ordinary gateway. The price is £40.

The "Eagle" American reaper, invented by Mr. Caryl, of Ohio, and exhibited by Mr. H. Clayton, of Atlas Works, Dorset-square, London, is the best we ever saw for mowing grass crops, and as a corn-reaping machine requires alterations in its construction before it can cope successfully with our heavy and tangled crops. It is small, compact, and lighter than any good machine ever seen before, in proportion to the amount of work done, that is, having a five-feet cut, and delivering the cut corn in bundles by an automatic rake. The draught is directly upon the axle of the main carriage-wheel, leaving the frame carrying the cutters free to conform to any unevenness of surface; and this frame is balanced, so that the driver can instantly raise the knives over an obstacle by depressing the back with his foot, yet the cutters may be only an inch above the ground. Instead of having spurwheels, pinions, and cranks to work the cutters, the main cast-iron travelling-wheel (of 3 feet 7 inches diameter and 11 inches broad) has a zig-zag curved slot through its periphery, the angles of which act as cams to give a vibratory motion to a roller connected with the cutter-bar. The knives are acute, not serrated, and slide above fixed sharp fingers, having thus a clipping or shearing action; they are kept close and free from clogging by a spring pressure-bar, and each individual knife may be unscrewed off and renewed at pleasure. The length of the vibration is only 2 in., and the motion comparatively slow. When used as a mower, there is not a cog-wheel in the machine, and only 27 bolts. A curved platform is added for reaping, and a radial arm sweeps (by an ingenious spring-box and toothed-quadrant arrangement) backward and forward over the platform, alternately lifting and letting fall a rake, which delivers a bundle of corn at every 3½ feet, or allows more to accumulate at a time upon the platform, at the will of the attendant. The price is £35. For the sake of comparing the working parts of this with other machines, we counted on Burgess and Key's reaper 2 travelling-wheels, 6 cog-wheels, 10 riggers, 6 endless bands, 3 brass and 18 other bearings, 4 rollers, and the reel and knife-bar; on Crosskill's, 4 travelling-wheels, 7 cog-wheels, 4 riggers, 3 endless bands, 12 brass and and 4 other bearings, 2 rollers and the reel and knife bar; on the "Eagle" 2 travelling-wheels, 1 pinion, a toothed quadrant, spring-box and ratchets, 2 small riggers, chains and slides, 3 riggers, 1 endless band, no roller, no brass, but 15 other bearings, and the reel and knife-bar. Burgess and Key's is 10 feet wide, weighing about 11 cwt.; Crosskill's is 8 feet wide, weighing about 17½ cwt.; and the "Eagle" is 8 feet 3 inches wide, weighing about 7 cwt. 96lbs., or as a mowing machine 6 cwt. 78lbs.

We are informed that a machine is in progress which is intended to gather and tie the sheaves after the American reaper. Whether or not this may come to anything, at any rate the employment of reaping machines has received a great impetus by the introduction of great simplicity into the mechanism, and its adaptation to pick up laid and storm-broken crops; and the introduction of the reapers without platforms, to mow our natural and artificial grasses, leaving them scattered as though tossed by the hay-tedder, is an advance that may be expected to gladden the heart of the large meadow-land occupier, and free him from dependence on the slow and slovenly scythe.

IMPLEMENTS FOR SOWING.

Messrs. Hornsby and Sons exhibited six drills of various kinds. They received three prizes and two high commendations. The general purpose drill, which obtained the first prize, is a very perfect implement, fit for drilling all sorts of corn or seeds with or without manure, at all distances and in all quantities. The vulcanized India-rubber tubes are a great improvement upon the old tin cups; but we hear some complaints about their non-durability. One of the greatest improvements in the drill is this: the seed-box is balanced on its centre, and by means of a screw and levers at one end, under the command of the drillman, can be lowered endways as the drill travels, so that the box is kept as level on the hill side as upon the flat, and the delivery of seed is perfectly regular. We have also to notice that the manure and seed coulter act independently. Upon the main coulter bar, and behind the manure delivery tin, is attached a supplemental coulter bar, with independent leverage; both coulters being pressed into the ground with separate weights, there is no difficulty in depositing corn, seeds, and manure regularly, at any depth, one below the other. Between the two coulters there is a convex rake, which introduces a fine mould-bed between the manure and the seed. The price is £51 complete.

There was a small occupation drill, for which a prize of £2 was given; and a two-row ridge drill, with the first prize of £5. In this latter the delivery of both seed and manure is very regular. The manure coulters are placed before concave rollers, by means of which the ridges are brought into their proper form, and the seed is deposited and followed by second rollers, leaving the work completed in one operation. The price of the one is £19 5s., of the other £29.

Messrs. Garrett competed with eight implements, and were awarded six money prizes (four first and two second), and one high commendation. For the patent combined general purpose drill and broadcast manure distributor, invented by Mr. Chambers, they obtained the first prize of £3. We note here the same improvement as in Hornsby's, the seed and manure coulters working on independent levers, and both following in the same track. In order to obtain a regular supply of manure from the box, the drillman is enabled, by pulling down an iron lever at the near side of the drill, to move backwards and forwards a large wooden valve, so disturbing the manure and bringing it down to the depositing barrel. There is also a sliding bottom to the manure box, by which the quantity may be regulated from 6 to 150 bushels per acre without stopping the drill. The price of this drill is £51 10s. On the same stand we observed a patent combined seed and liquid manure drop drill, the joint invention of Mr. Spooner, of Ealing, and Mr. T. Chambers, junr. This spasmodic deposit of liquid manure is obtained by a revolving wheel fixed on the lever of a water drill directly behind the coulter, into which the water manure and seed are deposited at regular intervals. Those who have been turnip growers this year will be well inclined to value this implement. In some districts no plants of turnips could have been obtained without these liquid manure drills. Whatever may be our opinion respecting them, taking an average of seasons, there can be no doubt about the advantage all have received from their use during the past season. It seems that the seed does receive sufficient moisture to cause it to vegetate when the soil is in the driest state. But the benefit of this implement is that it is so arranged as to act as an ordinary drill, depositing dry manures in a continuous stream without liquid. A first prize of £4 was awarded to this drill. Its price is £33 10s.

The well-known Chambers' patent broadcast manure distributor received a prize of £8. In neighbourhoods where top-dressings are resorted to, this is a most valuable implement, from the equality with which it distributes the most difficult manures.

Messrs. Holmes and Sons exhibited and took a prize of £7 for a corn and seed drill for large occupations. It has an improved steerage, superior to the fore-carriage system, being steered from behind by a screw: there is a good hill-side movement: by a vertical rack fitted to each end of the axle, the seed box is raised or depressed at pleasure; price £27 2s. This firm exhibited an improved manure distributor, which took a prize of £5. The delivery is very clever; price £14. They also exhibited what is termed a new implement for the broad-cast sowing of oats and barley: it covers 9 ft.; price £9 10s. It seems scarcely worth while to have a machine simply for this obsolete practice. We notice, too, a general purpose drill; price £31 10s., commended: and a manure and seed drill with concave rollers and liquid manure delivery; price £25, highly commended. This carries an iron barrel tank in front of the seed box; a series of endless webs fitted with cups revolve in this tank, and the water thus drawn is ejected into pipes that communicate with the cups which receive the dry manure from the box, in company with which it passes to the earth.

Messrs. J. and F. Howard produced a drill presser, for which they justly obtain a silver medal. This drill is intended for light land. It follows three ploughs. The pressing of the land, the depositing and covering of the seed, are effected in one operation. It is very necessary to obtain a firm bottom for seed, especially wheat, and particularly on clover-ley, for the ravages of the wire-worm are materially checked thereby.

Messrs. Reeves exhibited a new implement, a patent dry manure distributor, which obtained them a prize of £5. It can be used to sow broad-cast either manure or corn, and costs only £10. There was also a two or three-row drill, for liquid and seed, on ridge or flat work. Attached to the coulter is an iron box, containing a valve, opened and shut by means of slugs on a press-wheel, running before it. A constant supply of liquid is obtained through pipes from the tank above, to this box, and dropped at intervals. The invention is of great advantage on light lands, as the groove for the manure and seed, made by the press-wheels, is of such a solid nature as to retain the fluid passed into it. The seed and liquid may either be run in one continuous stream, or in bunches. The price is £32. We also found here an economical drill, for dry manure and seeds, for which Messrs. Reeves received a silver medal. The price is £12. This cheap and useful implement is fitted with the distributor that took a prize. Its purpose is to drill four rows, 18 inches apart, of guano, superphosphate, &c., without mixing with ashes, from 2 to 12 bushels per acre.

Mr. Isaac James obtained a £2 prize for a liquid manure distributor, price £24. The inconvenience in using liquid manure has been the difficulty in getting it to run. Mr. James has introduced strainers, to prevent the pipe getting choked; but we doubt whether such an implement will ever become extensively used—the expense is so great; and the end to be obtained by this is better realized by the combined liquid manure and seed drills. It carries 270 gallons, and scatters its contents over 14 feet of ground.

Coultas, of Grantham, exhibited some good useful drills, which appeared cheap. They had, many of them, nearly all the best features of Hornsby's, but were not so well got up. There was nothing like fashion about them, but plenty of service. The iron and tin-work looked like lasting. The general purpose drill was priced at £42. The turnip and mangel-wurzel drill, with manure box, £26 10s. To us they ranked amongst some of the cheapest things in the yard, being fitted, as we before said, with almost all the latest improvements.

Fisher, of Thrapston, exhibited some good cheap drills. The coulters are raised by the simple lever that raises the teeth of the horse-rake. The price is £15.

Messrs. Wallis and Haslam.—The great advantage of the drills of this firm is their cheapness: A 15-row corn-drill for £30, one 13 rows £26 10s.; a 7-row turnip manure-drill £28, one 3 rows £17 10s. The workmanship is plain but effective, and the improvements modern.

Samuelson exhibited a hand seed-distributor on a simple and novel construction. There is a long box upon a barrow; beneath the openings are triangular pieces of wood, upon which the seed falls and disperses. The delivery of the seed is regulated by its falling through the holes on two reciprocating bars, and, however the opening is narrowed or enlarged by the action of these bars, the seed is always sure to fall upon the centre of the angular distributors beneath.

Powell's dibble, invented by "Sigma," next attracted our attention. We found it commended by the judges. It is worked by both hands and one foot. It is made for four or five rows, for wheat, or mangel, or beans, and the price varies from £3 3s. to £3 6s. The holes are made by pressing the machine down with the foot; the seed is dropped by pulling a part of the frame-work up, and by lowering it again the seed is pressed solidly down and the cup filled for a second discharge. At the bottom of the seed-box are permanently projecting dibbles; above these dibbles and beneath the seed is a steel bar perforated with holes to correspond with the dibbles. When the dibble is pressed down, the holes are exposed to the seed and filled by it; when the frame-work is drawn up, the bar is slid along, carrying two corns with it, till it comes between a stop-brush fixed above each dibble, to cut off general communication, and the tubular dibble beneath, into which it discharges. Of wheat, this implement, employing one man, will do 1½ acres: The cost of that will be 3s. per acre. Now a man with two dibbles of the old kind can do but half an acre, cacompanied by a woman and three children, which would involve an expense of 8s. per acre; and the cheaper mode has the advantage of being both more economical and more regular in the deposit of seed than is the case with the most expensive plan.

Hunt Brothers had some little hand-drills for turnips, that may suit small occupiers.

The general purpose drill of Messrs. Tasker and Fowle, price £54, is noticed principally because of its improved steerage. In place of the old rack and pin, there is now a quadrant worked by a worm and winch, which gives the steerer great and more immediate control. The delivery of manure is regulated by slide-boards, worked by a rack from the centre. The drill, however, is too dear. Their distributor is simply a wire-sieve running the whole length of the seed or manure box, which receives and distributes whatever is to be sown.

Gower's drills were good, but too expensive.

Sewers' turnip-dusting machine is fitted with screw stirers in the manure box.

Smyth and Sons exhibited fifteen of their drills. Curiously enough, they got neither prize nor commendation, although the workmanship was excellent and the machinery very simple. Their general-purpose drill is only £40, and all the others are proportionately lower than the drills of other firms.

IMPLEMENTS FOR HOEING.

There were five horse-hoes that took prizes, and of these we shall speak first, taking them in the order in which they stand upon the prize list. But before we enter upon a review we must say that we were disappointed not to find in this class a wider recognition of the fact that, to work efficiently, each hoe must work upon an independent lever. We think, if we mistake not, that, except Garrett's, we had no specimen of this sort for hoeing wheat and spring-cropping: nearly all the makers have fixed their hoes to a bar, and have allowed them no freedom of play by which they could accommodate themselves to the unevenness of land; without this freedom they never can become popular implements, simply because they are not effective ones. When we were at Boston fair, last May, we saw a horse-hoe, invented and manufactured by a Spalding man, named Garnes or Garner, which, so far as usefulness and cheapness are concerned, stood far before anything at Salisbury. There we had the independent lever for each hoe, and pressure on any particular hoe that required it; and moreover the implement was not priced at £20 or £15, but, so far as we remember, its cost ranged from £6 to £10, according to the width of the purchaser's drill. Now Garrett's is a good hoe, but it costs £19; the work in both cases being the same, the former may be said to have the advantage. However it did not fall to the judges' part to decide between them, and so Messrs. Garrett carried off their 35th prize! They showed a horse-hoe on the same principle, with a seed-distributor attached to it, so that the clover and grass seeds may be sown and hoed-in in one operation, costing in all about 6d. to 1s. per acre. The "thinner" shown by this firm is not new: there are other thinners we like better. The vertical motion would not be so good as the horizontal motion for the cutter, unless it were supported by a lever at the command of the driver. Huckville's is on this principle.

William Smith takes a prize of £2 for an improved horse-hoe. The improvement consists in a self-adjusting motion. From the shafting to the axle are two perpendicular bars fitted with hooks: these hooks carry the framework in which the hoes are fixed, and allow freedom of motion; still the hoes have not free individual motion, but are all screwed to two bars. The price £8 10s.

Hugh Carson takes the third prize (£1 10s.) for a turnip or root horse-hoe. This is very simple. Suppose the trussed beam of a Ransome's plough were mortised at intervals of 3 or 4 inches, so as to admit the shaft of a hoe, first running horizontal and then turning at right angles downwards to the blade. The length of the horizontal shaft allows of the hoes being adjusted to any width. It is rather strange that such a simple plan was never before thought of.

Priest and Woolnough take a prize of £2 for a rather expensive horse-hoe, which appears to have a good deal of play, and is pretty well adapted to hill sides, but certainly not to inequalities that may occur within the width of land they embrace.—Price £19 10s.

Bentall receives a prize of £1 10s. for his Universal Cultivator adapted as a horse-hoe for turnips. For the purpose it answers admirably, and we advise all who have the implement to fit it with the hoes he has brought out.

Henry Cogan's horse-hoe is highly commended.

J. and F. Howard's receives a similar distinction. The price is low, and there is an improvement in having a blunt instead of a sharp edge to the shaft of the hoe, where it rises from the blade. This prevents choking.

Walker's horse-hoe is highly commended, and can be adjusted while moving, by a parallel motion—a sort of hill-side motion.

Holmes and Sons carry off a high commendation with an improved shape of hoe, for turnips: certainly very good, but would have been better had the shaft been blunt instead of having so keen an edge.

Busby's highly-commended horse hoe carries, behind the three tines, what by this time should be an exploded revolving harrow. If it could be made to revolve the other way, that is, in a contrary way to the progress of the hoe, and so tear out and throw over itself the weeds cut by the knives, it might do good; whereas it now only does harm by pressing the weeds into the soil. The price is £2 10s.

Ransomes and Sims exhibited a very good horse hoe, which received likewise a high commendation, and is very easily adjusted. Price £3 6s.

Samuelson's Huckvale's turnip thinner is this year greatly improved. The circular revolving thinner, which was placed diagonally in a square frame, occupies the same position in a second runner frame, which is a lever, and so can be lifted out of work, or regulated at pleasure, by the steersman, to suit any inequality in the turnip plant, while the implement is progressing. It receives most deservedly a high commendation, and casts both Garrett's and Eaton's into the shade. Price £7 10s.

With respect to Eaton's, we must make a few remarks. We consider it better than Garrett's. It will thin and horse-hoe in one operation, or horse-hoe alone. The single row implement costs £5, and that for taking two rows £6 6s. The "thinner" revolves horizontally, and can be elevated or depressed by the steersman; but as a thinner it did not do its work quite so accurately as Samuelson's at the trial. Allowing a little for this deficiency, and remembering its application as a common horse hoe, together with its cheapness, we give it our approval as the best specimen of this class of implements.

Before we leave the hoes we must notice A. and T. Fry's implement, to recommend the mode in which the knives are made to expand or contract at the will of the workman, without stopping the horse. By simply turning one of the balls round backwards or forwards, any desired change in the width of land to be cut is made. The price is £4 2s. 6d. It is commended.

Green's horse hoe for wheat and spring cropping also has a commendation; the price is reasonable, £12 12s., but it is open to the same objection we have preferred against all the wheat hoes, except Garretts', and we disapprove those that are not mentioned, upon precisely the same ground.

We had almost forgotten to notice "Sigma's" hand hoe, invented by Powell, of Hurst-green, Sussex. Fancy a common hay-fork with a broad steel bar connecting its prongs, and placed at such inclination that as you hold the fork in the manner of a hoe its under-surface rests flat upon the ground. This bar or band is two-edged. Keeping the under surface sliding on the ground you push and pull, but never lift it out of its work, and this constitutes the "draw-shave" motion of the much-talked-of "Sigma's" hoe. We understand a man can do an acre per day with one of these tools; but we must leave our readers to judge of their utility. They cost but 6s. each, and so the experiment will not be a very expensive one.

HAY MACHINES.

This was an interesting trial of a very useful class of implements; and we have great pleasure in urging upon every extensive grass farmer the adoption of this accessory in farm practice. It is true, it can only be brought into useful cultivation once in the year; but let any one see the effect produced in the trial-field. The grass to be cut was old, coarse, very rough and heavy, mostly down. It was cut by the reapers—chiefly by Dray and

Co.'s; it was well tedded by the haymakers; and, at the close of the day, was nearly ready for leading. The competitors in this class were Messrs. Wyatt; Samuelson; Barrett, Exall, and Co.; Smith and Ashby; Nicholson; Ransomes and Sims; Thompson; Lane; and Silcock. The field was small; and no extended trial could be permitted to any one. Those which obtained most favour with the judges were subsequently put to a second test—certainly a very severe one; for the grass, being very heavy, and partially withered, began hanging so tenaciously together, as to require considerable effort to scatter it abroad.

Mr. Nicholson's machine appeared to attack and scatter the heavy lumps or accumulations of grass with perfect ease, and could not be made to clog. It is very simple in its construction, light in draught, and has a very rapid and good backward motion. Its teeth are in good form, as the grass was thrown off without difficulty. The mechanical arrangements are simple; and the various adjustments for increasing its speed, altering its motions, raising and lowering the forks, and to prevent clogging, are very satisfactory. It is fitted with tubular iron shafts. Price £15. Prize of £4.

Messrs. Barrett, Exall, and Andrewe's machine was selected for a second trial, and, after a close competition, was awarded the second prize of £3. It is also of simple construction and easy adjustment. It has a lever reversing movement, the oiling parts covered by a cylinder. The backward motion did not tell well, the hay not being sufficiently moved; but this might have been easily altered, could time have been given. It did not clog in the severe test it was put to. Price £14.

Messrs. Smith and Ashby's machine came next in the trial. It did its work admirably, both in its forward and backward motion; but, in the very severe test it was put to, it betrayed symptoms of clogging, though we believe it did not actually do so. It is of excellent construction, and simple in its various adjustments for facilitating it in work, reversing its action, and raising or lowering its tines. Few can equal it; but the price is higher than some others—£15 15s.

Mr. H. A. Thompson's machine proved itself next in favour, although its price is £16 16s. In work, it did well in every respect; and its mechanical construction, and adjustment for promoting its steadiness in work, are good. Its tines have double prongs, for giving better effect in forward and backward action.

Ransomes and Sims' machine is the same in pattern as Nicholson's. It is exceedingly well manufactured. Price £16 16s.

Wyatt's is a well-made machine. It has several peculiar adaptations, which are very ingenious; and the price is moderate—£14 14s. It worked fairly, but could not stand a severe test without clogging.

Samuelson's machine, by some unhappy adjustment, failed in its work, and clogged. Price £13 13s.

Silcock's machine, in trial, also failed, the grass being scarcely moved. This was owing also to some unhappy adjustment.

Lane's machine did not work satisfactorily, and only from similar causes.

Mr. Nicholson also exhibited a two-horse machine, suitable for large occupations. It did not work with the same facility as the smaller one, although upon the same principle in construction. The grass did not become wholly disengaged from one set of teeth before being caught by another set, on the rake-teeth cylinder following. It was highly commended.

HORSE RAKES.

This is also the triennial test of horse-rakes. There were thirteen competitors—Messrs. Samuelson, Fisher, Howards, Williams, Barrett and Co., Smith and Ashby, Cooper, Ransomes and Sims, Thompson, Woodburne, Silcock, Urry, and Rowsell. They were called forth to their work in the above order. The field was much too small for an effective trial; yet we must say sufficient was performed to fairly entitle the judges to give a decision, as every rake was put through "the same paces." They were first directed to pass across the heavy field of well-tedded grass, for the purpose of drawing it into wind-rows—not a legitimate business for a horse-rake, we admit; but if capable of doing it, all the better; and the grass must be removed, or no clean raking can follow. In this department of the trial it was manifest some rakes had a decided superiority, and some would not do this kind of work at all; subsequently Rowsell's large wind-rowing and barley rake was put to the work, and all was drawn into rows very satisfactorily, and the clean-raking commenced. We will just run through our note-book of the various trials.

Mr. Samuelson exhibited a rake invented by Marychurch, of Haverfordwest. It has a self-relieving movement, which can be taken advantage of, if required; but we did not see it applied, the side movement for relieving the rake being lifted by a string held by the leader; it has also a peculiar screw appliance for depressing or raising the teeth. Price £8 8s.; takes 6 feet. It drew up the heavy grass tolerably, and worked pretty well in clean-raking, the leader relieving it from the front. It was highly commended for the peculiar facility in its delivery, being nearly self-acting.

Mr. Fisher's came next. The beams are of tubular iron, and teeth of spring-steel of somewhat peculiar form; straight beams, teeth curving forward. This rake can be relieved by either leader or driver, from behind or by the horse's side. Price £7 10s.; takes 7 feet. It worked very well in every respect, and the simplicity of its construction is commendable; but we thought the price rather high. Prize, £1.

Messrs. Howard's rake next appeared, and, like every implement brought forward by these indefatigable men, was ready for its work at once. It is prepared for a weed extirpator as well as a rake, by affixing a small tine to the back of the rake tooth. The teeth are of steel, and of great length and capacity, and curved so high that obstructions rarely interfere; and they can be set so as to ride over the ground and gather the barley without the soil. The lifting-bar is above the teeth, giving it an advantage in filling and emptying; the fixing link to the lifting bar looks objectionable. Takes 7 feet 3 inches. Price £8 10s. It drew up the heavy grass admirably, and in clean-raking could not do better. The prize of £3.

Williams' rake was next tried. It is a long and very superior rake, taking 7 feet 6 inches, of easy and simple construction. The compound lever makes it easy to lift on emptying, and it has a good adjustment for permitting the teeth to swim over the surface, so as to gather the barley and leave the soil. It drew up the long grass well into rows, and nearly clean; in the clean-raking it did very nicely. Highly commended for its easy compound lever-lift and general arrangement. Price £7 10s.

Messrs. Barrett and Co.'s came next. This is a useful rake; but its teeth are too short, and the weight not heavy enough, for the severe trial of drawing up heavy grass. Rakes very well in clean-raking. Price £7 17s.

Messrs. Smith and Ashby came next under the judges' inspection. This is the old improved Stamford rake, and few excel it. Its steel teeth make it expensive, £8; and it is rather short, taking 7 feet. It is light, but works remarkably well. The teeth are angular, not sickle-shaped. It drew up heavy grass better than any other, and in clean-raking as well as need to be. It is also well adapted for raking up couch grass. Prize of £1.

Messrs. Cooper and Co.'s rake was next tried. This is a counterbalance lever rake of useful arrangement, each tooth having its own counterbalance; *i. e.*, a weighty casting at the other end of the tooth at the back of the hinge-bar, each being independent of the other. It could not draw up heavy grass into rows owing to this counterbalance raising the teeth too readily, which is good for barley raking. It has an arrangement for the weed-extirpating teeth to be added. Weighs 4½ cwt., takes 7 ft. 6 in., price £7 18s. Highly commended for its useful adjustments in balancing the teeth.

Messrs. Ransomes and Sims' rake was late in the field. It is exceedingly well made; the lift not so easy as some. It has a sliding-rod to take every alternate tooth out of work when required; takes 7 ft. 2 in. and 8 ft. respectively; sides nicely regulated, on the Biddell-scarifier principle. It drew up the grass admirably, and its clean raking was equal to any. Price £7 10s. Prize of £3.

Mr. Thompson's rake drew up the grass well, and in large rows, proving its capability to rake rough stubble; its clean raking was not so well done. It has a somewhat peculiar combination of levers, so as to ensure a receding motion of the teeth when raised, for the better discharge of the burthen; its adjustments are good; takes 7 ft. 1 in. Price £8, extra for steel teeth 10s.

Mr. Woodbourne's rake is smaller in its general detail, and too light for drawing up heavy grass. In clean raking it did very well. The teeth are confined in loops or links from the back. It has a simple plan for holding it safe when travelling. Price £6 10s.

Mr. Silcock's rake failed to make a row of grass. It worked freely in clean raking, but we thought its bar detrimental. Price, steel teeth, £8.

Mr. Urry's rake is well arranged for work in various ways, but without much complexity. "The teeth are made to rake more or less on their points, by winch, worm, and pinion, while at work." Its excellence in work, simple contrivances for ready adjustment, and price (£6 15s.), caused the judges to award it a prize of £2.

Mr. Rowsell's American horse-rake, iron-pointed, is more particularly a wind-rowing rake; *i. e.*, for drawing swathe-hay into large rows for making into hay-cocks. In this department of its work it does admirably, taking out one-half of its teeth, which are simply run through a mortice-hole in a square long beam, and so easily taken out. For barley raking, either for rowing or clean raking, the whole are kept in. It is guided by two handles, nipping two of the tines, which all project equally from either side of the beam. When full, the workman just lifts the hinder teeth; this causes the front teeth to catch the soil, and the rake is thus thrown over and leaves its load clear. Price 28s. and 40s. respectively. Silver medal.

IMPLEMENTS FOR CARRYING.

With respect to carts, the society issued recommendations in behalf of cranked axles, long shafts, and high wheels; and these recommendations have been very generally complied with. The long shafts are preferable for the same reason that long levers are preferable to short ones; but the cranked axle is of doubtful advantage when it supports a general-purpose cart, because, for instance, when tipped, the inclination is so small as to create almost as much difficulty in unloading the body as there was in loading it. On some country roads, too, the ruts would be too deep for them, in winter. And the high wheels are open to objection, where they are not overhung by boarded shelvings; for in all dirty weather, and particularly while travelling on dirty roads in windy weather, the cart would be filled with mud. Carts made according to the Society's suggestions have undeniable advantages upon the hard road; but we do not think them fitted for bad farm-roads.

T. Milford and Sons, William Busby, A. and T. Fry, Alfred Crosskill, and J. and F. Howard took the prizes given for carts constructed on this principle. Wheels generally vary from four feet to four feet nine inches in diameter; but here we have wheels more or less than six feet in diameter. With raves and shelvings complete, the prices of these carts vary from £15 to £18; and Busby, who took the second prize, has the advantage of producing the cheapest article. For one-horse carts Busby took the first prize, with a very strong, well-made article. The wheels are comparatively high, and the body low: the axle and shafts are straight. The shafts are nearly horizontal, and fixed to the axle; whereby the draught is not communicated through the body, but directly to the point of resistance, which is accomplished by splicing the shafts, and employing three small bolts to pass through the turned pillars, to suit any sized horse, and to allow of the replacing of a shaft in case of breakage. With harvest-raves, the price of this cart is £15. We never saw any cart we could so safely recommend for long service. The materials are elm and oak.

William Ball obtains the second prize of £4 for a very good cart, price £16. T. Milford and Sons obtain the third prize for a cart that had no defect. When speaking of the crank-axled cart manufactured by this firm, we forgot to mention the defective tail-board. They received, too, a silver medal for an improved one-horse cart for general road and farm purposes, price, complete, £15 15s. The body is made of planks, and fixed directly to the axle, bringing it as low as tipping will allow. The shafts are attached, so as to attain a straight line of draught from the axle. This looks strong enough for a London brick cart.

Woods, of Stowmarket, received a prize of £2 for a very strong cart, which with raves, &c., is sold for £14 10s. The principal thing to notice here is that the raves are jointed in four parts, and fold up conveniently. The wheels are specially good.

A. Crosskill and J. and F. Howard received respectively prizes of £2 and £1. We need say no more of the first than that 4,000 carts of this make (Newcastle) have been sold since 1846. In Howards', the shelvings are entire and permanent; and the tip consists simply of three links of a strong chain fixed in the shaft-head, and caught short or long at pleasure by a hook in the frame of the cart-body. The price of the one is £15 15s., of the other £14.

Milford's, Thompson's, & Hayes' carts are all highly commended; Fry's also, bearing this distinction, demands special notice on account of its wonderful solidity. The bottom is one piece of elm, the sides and front are all in one, and then three thick boards of well-seasoned wood are strongly bolted together, making, indeed, a union of strength. Price £15.

Garne's highly commended cart has many points of excellence. First, it is strong; second, the cart is balanced on the ends of the shafts; third, the carter has command over the tipping apparatus from behind, by means of a connecting rod which runs on one side of the body; fourth, it is cheap. Price £13 13s.

The arrangement of the tailboard in Eaton's highly commended is quite worthy of remark. It is a fixture, and when let down, it swings under, and is retained there by a spring catch, and while in this position the cart may be tipped without its touching the ground. The tipping apparatus, too, is admirable. The price with raves, &c., complete, is £11. This is an exceedingly cheap and useful conveyance.

The best waggons we saw were those made by Milford and Sons, Kiddle, Crosskill, Gifford, and James. The prices varied from £17 to £28. Milford's, Crosskill's, and James' were furnished with breaks and whole shelvings. They took the first, third, and fifth prizes. Dray showed two very useful and cheap light vans, but not for farm purposes.

T. Milford and Son competed with three carts and two waggons. A waggon took the first prize, two carts the first and third, and the remaining cart a silver medal.

George Milford exhibited two waggons and one cart. One of the waggons received a prize, and the remaining waggon and the cart a high commendation. This is a very honourable testimony to the excellent workmanship both these firms display and deserves this simple notice.

MACHINERY IN MOTION.

In this busy and most interesting department of the show, we counted no less than thirty steam-engines, twenty-three combined thrashing machines, and three fixed barn-works, in simultaneous operation; besides brick and tile machines, saw mills, and innumerable chaff cutters, cake breakers, crushers, &c.

The following are a few of the more prominent objects of interest:—

Messrs. Barrett, Exall, and Andrewes showed both a portable and fixed steam engine—the latter having a horizontal cylinder—a combined thrashing-machine, a set of fixed barn works, and, among other machines, their beautiful endless-band saw, which is adapted for circular, irregular, or angular work; and wastes less wood, cuts with greater rapidity, and requires at least one-half less power to drive it than the circular saw.

Messrs. Brown and May, of Devizes, showed their excellent steam engines, and an exceedingly compact thrashing, shaking, riddling, and winnowing machine. Price £100.

Mr. Burrell, of Thetford, exhibited his superior portable engines; a patent cloverseed shelling machine, invented by Constable, price £48; and his combined thrashing machine, fitted with Goucher's patent beater, with barley awner, a finishing dressing machine, and a patent screen, which separates the thin corn from the best, price £125.

Cambridge's engines were at work, driving his combined thrashing-machine, which finishes the corn for market, being fitted with a superior dressing apparatus on an entirely new principle. Price £120.

Messrs. Garrett and Sons have introduced a revolving screen, with Archimedian screw, into their thrashing machine, together with an improved slat riddle, which does not foul or require cleaning when at work. And their engines are constructed with a very durable kind of fire-box.

Mr. Hayes, of Elton, Hunts, showed his straw-elevator for carrying straw from a thrashing machine up the straw-stack: the thrashing machine, too, has an effective and simple shaker, constructed of only two perforated boxes.

In Messrs. Holmes and Sons' thrashing machine we observed that the chaff, cavings, and straw are delivered so far from each other, that they cannot possibly get mixed; and great attention has been given to the position of the working bearings relatively to the straps, so as to obtain the least amount of friction. Price £100.

Messrs. Hornsby and Sons show their well-known portable engines and combined thrashing machines, which contain two winnowing machines, one blower, two hummellers, and are fitted with the "button beater."

Messrs. Humphries' first-class thrashing machine is well known. It is light and compact, weighing only 24 cwt.; the divided vibrating-trough prevents shocks, and a white-coater or smut machine is added, with a second dressing apparatus, which prepares the grain for market. Price, with finishing dresser £93, without £83.

Oliver Maggs, of Wincanton, exhibited the portable engine with peculiar-shaped tubes rivetted to the end-plates, in order to avoid the leakage to which round tubes are so liable, which gained the prize at Newton as the most practically useful engine. His thrashing machine is very compact, the shaker consisting of revolving spindles armed with fingers, after the principle of Brinsmead's. Price, with finisher, £130.

Messrs. Tuxford and Sons, of Boston, showed their well known portable and fixed engines, the boilers having flues and tubes, which construction secures the greatest durability. Their thrashing machines have received a recent improvement, the table-shaker being vibrated by eccentrics working in straps of lignum vitæ, and the trough or shoe being divided, so as to "break" the course of the mingled corn and pulse, and facilitate its separation by the riddle. There are only two riddles, no "spoutings," and the chaff is blown out by a blast below the riddles. The machine is very free from complicated machinery. Price, with finisher, £115.

Messrs. Ransomes and Sims exhibited fixed and portable steam engines, combined thrashing machines, and an admirable arrangement of chaff cutters, oat mills, bean cutters, cake breakers, linseed bruisers, root graters, &c.: driven by a single steam engine, by means of intermediate universal motions and spindles.

Clayton, Shuttleworth and Co. displayed their first-class portable and fixed engines, their combined thrashing machines, and fixed barn works.

Boby, of Bury St. Edmunds, exhibited his ingenious and admirable corn screens: one with a novel and simple contrivance for setting the wires coarser or finer. An invaluable machine for giving an equal sample.

R. Impey, of Street, Somerset, showed some excellent dressing machines, in which winnowing is combined with blowing; and they are simple in construction, and, unlike many others, comparatively easy to work.

Nicholson, of Newark, had his very neat little two-and-a-half-horse portable engine (price only £60) driving cake breakers, &c. His rotary corn screen, invented by Palmer, is very effective and expeditious in its operation.

Richmond and Chandler's chaff cutters and crushers; Messrs. Turners' two-horse portable engine (price £90), and their first-class roller mills; Messrs. Wallis and Haslam's (Basingstoke) corn-dressing machines; and Williamson Brothers' (Kendal) steam engines and horse-power thrashing machines; Tasker and Fowle's (Andover) steam engines and thrashing machines; Sawney's dressing machines, with cliver or hariff screen; and Robey and Co.'s steam engines and thrashing machines, were objects of much attention and interest.

Sparke, of Norwich, exhibited both vertical and circular-saw tables; and Tuxford and Sons showed a circular-saw table, with an admirable spring fence plate.

Smith and Ashby, of Stamford, had their superior safety chaff cutters, and their double-action oilcake breakers, crushers, and pulpers: driven by one of Nicholson's two-horse-power portable steam engines; very compact, and amazingly simple in its working parts; price only £57 10s.—a most useful and convenient motive power for the farmer's homestead.

One of the features of this division of the yard was Clayton's clay-preparing and brick-making machinery, an engine of three or four horse power being able to produce from one machine a continuous stream of bricks at the rate of 12,000 to 15,000 per day.

MISCELLANEOUS.

We must now very rapidly name some of the more interesting articles, implements, and machines, distributed through the numerous stands, and not included in the foregoing notices.

Samuelson of Banbury: Gardner's unsurpassed turnip-cutter; Moody's root-grater; a new combined machine, by which chaff is cut, roots grated, and the food mixed at one operation—price for hand power £6 10s. Also a very improved form of lawn-mower, and the cheap, effectual American floating-ball washing machine.

Griffith's and Co., Birmingham: Keevil's admirable invention for cheese-making, which is adapted not only for effecting a great saving in the dairy, but for teaching farmers how to improve upon the old methods and make better cheese. This is the contrivance of a thoroughly practical man, and has been largely tested and found to be one of the most valuable improvements ever introduced to the farmer's notice; and its excellent and effective curd-cutting, draining, and curd-pressing and drying, are equalled in merit by the extreme simplicity, neatness, and cheapness of its mode of construction.

T. R. and R. Hunt, of Earl's Colne: The clover hulling machine, with dressing apparatus of this firm, we believe to be not only the best yet made, but requiring much less driving power than any other.

Burgess and Key: We admired the very neat little rotary force-pump on this Stand. The American platform beehive received very great attention: the bees are transferred as often as necessary, and the honey removed without injury to the bees, and they are fed in the hive during winter and spring. The new horse-power, in which a horse walks up an endless revolving platform, is very simple, and may be of considerable advantage to small farmers, and for purposes requiring only a slight motive-power; but we should much prefer one of the two-horse portable steam-engines before referred to.

Cockey and Sons, Frome Selward: A single cheese-making apparatus; a patent tub, with hollow chamber beneath the bottom, for hot or cold water; boiler, &c., cheese-presses, curd-mills, &c.

J. and F. Howard, of Bedford: Their prize ploughs, one-horse carts, jointed harrows, tubular whippletrees, &c. An improvement of the coulter, by making the shank oval, received a silver medal.

Crosskill, of Beverley: Self-cleansing clodcrushers; bone-mill for grinding half-inch bones to dust; portable farm-railway, &c.

R. Impey, of Street: Combined winnowing and blowing machines.

Perreaux and Co., of Mark-Lane: A most simple, ingenious, durable pump-valve, made of vulcanized India-rubber. The cheapness and the effective action of this valve, and its small liability to derangement or wear, obtained for it the judges' approval.

Barnard and Bishop, of Norwich: A large collection of wire-netting, garden chairs, &c., troughs, hay-racks, and their patent root grater.

Barrett, Exall, and Andrewes, of Reading: Oilcake breakers, chaff-cutters, grain-mills, ploughs, and a very efficient clod-crusher.

Burrell, of Thetford: A cloverseed-shelling machine, saw-benches, &c.

Nicholson, of Newark: Oilcake breakers, corn-dressing machine, a patent rotary corn-screen and riddle, washing, wringing, and mangling machines, cottage cooking-grates, &c.

Richmond and Chandler, of Salford: Their chaff-cutters, crushers, &c.

Smith, of Kettering: His steerage horse-hoe, with improvement, and double-blasted winnowing machines.

Smith and Ashby, of Stamford: Their patent safety chaff-cutters for hand and for steam power, double-action oilcake breakers, corn-crushers, root-pulpers, &c.

Ball, of Kettering: His well-known ploughs, winnowing and weighing machines, grubbers, &c.

Busby, of Newton-le-Willows, near Bedale: His famous carts, ploughs, horse-hoes, and an implement for topping and tailing turnips.

Cambridge, of Bristol: His new patent double-blast minnowing machines, press-wheel rollers, self-relieving chain harrows, &c.

Dray and Co.: A large assortment of their first-class agricultural machines for all purposes.

Hill and Smith, of Brierley Hill, near Dudley: His broadshares, scarifiers, wrought-iron troughs, harrows, rick stands, wire fencing, &c.

Maggs, of Bourton, near Wincanton: Horse-powers, chaff-cutters, bean and oat mills, &c.

Ransomes and Sims: His celebrated ploughs, the light "pony plough," Cotgreave's trenching plough, scarifiers, mills, horse-power thrashing machines, stable fittings, &c.

Boby, of Bury St. Edmund's: His admirable corn-screen and dressing machines.

Coleman, of Chelmsford; Expanding harrows, cultivators, the revolving potato-digger, which with two horses will raise three to four acres per day, price £18.

Forshaw and Co., of Liverpool: Cattle and sack weighing machines, straw-cutter, bone-mill, flour-dressing machines, &c.

Bentall, of Maldon: His unequalled broadshare and subsoiler, in all its various forms for different purposes, his double-angle iron cheap harrows, and his root-pulper.

B. Fowler, of Fleet-street: His cast-iron bored pumps, force-pump, &c.

Stanley, of Peterborough: His roller mills, and excellent steam-cooking apparatus.

The stands appropriated to seeds, models, &c, were well occupied, the more noticeable and interesting being the grand collections of seeds, and specimens of grains, roots, grasses, &c., of Mr. Lawson, of Edinburgh, and Thos. Gibbs and Co., of Half Moon-street, Piccadilly, seedsmen to the Royal Agricultural Society; and also a novelty in the form of food for cattle, comprising "feeds" in separate packets, of an economical mixed farinaceous nutriment, exhibited by J. Thorley, of Newgate-street.

"ON THE MANAGEMENT OF WATER MEADOWS, AND THEIR BEARING UPON THE GENERAL AGRICULTURE OF SOUTH WILTS."

A LECTURE BY MR. E. SQUARRY, OF ODSTOCK, DELIVERED DURING THE MEETING OF THE ROYAL AGRICULTURAL SOCIETY, AT SALISBURY.

[Mr. SQUARRY has favoured us with the following corrected report of this important paper.]

Mr. SQUARRY commenced by observing that the streams, which, under careful management, become the scources of so much usefulness and fertility in the valleys of South Wilts, with scarcely an exception, take their rise at the base of the chalk hills, and in the green sand formation, which in the neighbourhood of Salisbury everywhere underlies the chalk. For the most part these streams are not immediately affected by long droughts, but, fed in their courses by frequent springs, they continue to pour uniform volumes of water from about November to April, when the supply gradually decreases until the autumn, with the exception of a few valleys watered by springs which ordinarily become dry in the summer, and hence these districts have usually obtained the designation of "Winterbournes." He next proceeded to observe that as far as our knowledge yet goes there is nothing remarkable in the character of the analysis of the water of these streams. The fertilizing properties of these waters having been discovered and applied, it may readily be supposed that they were employed over as large an area as possible; hence, towards the termination of every valley, whereby its extended breadth and area of irrigation is increased the stream is found to be insufficient to afford that liberal and constant supply which experience has proved to be essential for perfect irrigation. He next observed that the soils of which the meadows of South Wilts chiefly consist, are an alluvium, alternating occasionally with strata of gravel, clay, and, frequently, peat. The most favourable deposit is that where the alluvial soil is at once deep and dry. He next called attention to a communication which he had received from Mr. John Combes, of Chicksgrove, near Tisbury (who might be regarded as the authority upon all matters connected with irrigation in the south of England) which contained so much practical and valuable information on the subject under consideration, in a condensed form, that he (Mr. Squarry) was induced to present it in Mr. Combes's own language:—"The water-meadows in South Wilts lie generally in the valleys at the basis of the chalk hills; their soil varies very much, some being alluvial, some gravel, some peat, and some clay. The land is of the most part too level to be irrigated by the catchwork system which is adopted in some other counties; consequently the water-meadows are mostly irrigated by what is technically called the ridge-and-furrow system, or more commonly bed-work. Their extent has been variously estimated, but I think it may be fairly stated at 9,000 acres. Their cost of formation at the present value of money may be said to average £12 per acre. Their cost for repairs of hatchwork, bridges, &c., is about £6 per cent. per annum on that sum. When new water-meadows are to be made, the first thing to be done, where water is in the subsoil, is to get the land made dry. Except this be done, no good water-meadow can be made. In the draining of land for water-meadow, care must be taken to put the underground drains in such a position as will least interfere with the irrigation works, otherwise the water used for that purpose will, by running down, carry with it earthy matter, and choke up the under-drains. Of course a great deal depends on the nature of the soil, the quantity and quality of the water, and the evenness of the land, as to the method best adapted for their formation. A dry soil will require less declivity in the beds, and less water than will be necessary in a wet clayey soil. In this latter description of land, the gradients of the beds must be much greater, and their breadths less than those necessary in any other kind of soil. But experience has proved that water used for irrigation must in all cases have rather a quick run over the land; otherwise, instead of proving beneficial, it will retard the growth, and deteriorate the quality of the grass. This will be obvious to any one going over a water-meadow in the month of April, as he will then see that in certain spots, where the land lies too flat, their is not a quarter as much grass as where the land is thrown up into proper beds. Many of the old water-meadows which I have before-mentioned were originally formed too flat, in consequence of which, many of them have within the last half-century been reformed, and of those remaining unaltered at least two-thirds would pay good interest for the cost of being newly-made. The gradients of the beds in these old meadows vary much, some of them being one in sixteen, whilst others are no more than one in seventy-two. The average quantity of water used for irrigating these meadows is about two thousand gallons per minute per acre. I shall next briefly state what appears to me the best method of management. Water-meadows should be fed off rather bare by the first week in October. The water carriers, feeders, floaters, and drains should be then properly cleansed out, and all the breaches at the hatch-work and other places made good, and the rats' holes stopped in order for watering. The watering should commence the first week in November, by which time there will be a crop of young grass about two inches high. It is very desirable to have the young grass when the watering begins, that the water may percolate through the grasses so as not to flood them; otherwise, they will, if flooded for any length of time, be stifled and become thin. The meadows should always be in readiness to receive the first fresh of the river from the autumnal rains, as this water is, especially after a dry summer, rich with alluvial matter. Many meadows are very much injured by being fed too late in the season, and by the treading of cattle: it should always be borne in mind that one mouthful of water-meadow grass in April is worth five or six of the same when fed in November. In general, the more the land is watered in November and December the better; but should the weather be very mild during this time, the meadows may have a few days' drying. In January the water should remain on the land about five days in six, unless the frost be so intense as to cover the meadow with ice, which is sometimes the case; then the water should be all turned off the land until a thaw takes place; the young grass will be protected by the ice, and even grow under it. In February three days in four will be enough for watering. In March the irrigation should be two days in four until the water is turned out to make the land dry for feeding the grass, which will generally be fit about the last week. As soon as the sheep have fed off a portion of the meadow, or about the middle of April, the water should be again turned over that portion, but care must be taken not to allow it to remain long on the land until the grass be grown high enough to keep above the water; during the remainder of this month and the following months of May and June, two days in a week will be enough for watering. In general the grass will be fit to cut for hay by the middle of June. In July and August, or until the second hay crop be fit to cut, the water should be used sparingly—one day in six will be quite sufficient. In September and October water-meadows should be kept perfectly dry. The above rules apply to meadows that have a plentiful supply of water; but those meadows that are short of water, which are by far the greater part, some of them required to be watered in five or six portions, technically called sterns, the whole of the water should remain on each stern for about five days at a time in winter, and two days at a time in summer, so that all the meadow may be watered in about twenty or thirty days in winter, and eight or ten in summer. A good flow of water, or what is called thick watering, is always to be preferred to that of thin watering, especially during the summer months; for a very thin watering for a week or more together at summer time, especially on a clay soil, is often injurious. I may here remark that night watering is preferable to watering by day, and the water will do more good in shady than in sunny weather. The water of the streams in this part of the country runs from the chalk, the upper green sands, and the upper oolite formations. That best adapted for irrigation is pure spring water. The water which produces the richest vegetation I have ever seen is from the oolite formation in the vale of Wardour: it has been analyzed, and was found to be remarkable for its purity; its soluble contents were the chlorides of sodium, calcium, and magnesium, in very small proportions; it presented no trace of any other metallic salts, and was in all other respects an unusually fine specimen of natural water; its saline contents were barely sufficient to give an opaline appearance to a solution of soap, and it was singularly free from the quality of hardness. The temperature of this water is three degrees lower in the months of May and June than the river water adjoining. Though both are used for irrigation in the same meadow, their effects are wonderfully different: the river water, although warmer, does not produce half so much grass as the spring water, and certain weeds which the land is subject to, such as the cow-parsnip and others, are entirely destroyed on the part watered by the spring, whilst on the part close alongside, watered by the river water, these weeds grow very luxuriantly. Where water of this description can be obtained, it may be used much more sparingly, and the meadow may have less gradients and wider beds than a meadow watered by river water. But river water, although not quite so forcing, will produce good grass, and the land irrigated thereby will be enriched by the alluvial matter contained in the water, which, every time it becomes in a turbid state, will, by the filtration by the grasses, leave a deposit of mud on the land, perhaps to the thickness of a sheet of writing-paper: this, by repetition, will in the course of time greatly enrich the soil, especially that which is of a gravelly or peaty nature. It is a pity that the alluvium in our rivers should be suffered to run into the sea, thereby choking up our bays and harbours, when it would so much enrich the land in the valleys through which the rivers pass. I may here remark that all water is very good for irrigation, wherein certain aquatic plants grow, such as brooklime, watercresses, and the water-milfoil, and where stones and other substances in the stream are thickly covered with lichen. Some of the best description of grasses for water-meadows are—Anthoxanthum odoratum, or sweet-scented vernal grass; Festuca pratensis, or meadow fescue-grass; Phleum pratense, or Timothy grass; Lolium perenne, or rye grass; Agrostis stolonifera, or fiorin grass. All these are found in the best of the Wiltshire water-meadows, especially the Timothy and fiorin grasses. I should recommend in all new water-meadows a mixture of Italian rye grass. I will now state what may be considered the average produce of the water meadows in South Wilts. In doing so I will take a meadow of twenty acres, depastured in spring by sheep, The spring feed of this meadow as fed in April will keep 400 couples of sheep twenty-five days, during which time these 400 couples will fold ten acres of arable land, and it will after this yield in the first and second cuttings of grass about forty tons of hay. As I have said, this may be considered the average produce of these water-meadows. But in order to see the capabilities of some of the best description, I will here state the annual average produce of some of them. In showing this, I will again take a twenty-acre meadow, the spring grass of which, when fed by sheep from about the last week in March till the middle of May, will keep 400 couples seven weeks. During this time these couples will fold in the arable land from fifteen to twenty acres. This meadow will then in two cuttings give at least sixty tons of hay. In this case there is annually put on the arable land fifteen acres of spring folding and sixty tons or more of hay, thus enabling the farmers to dispense with the growing of about twenty acres of turnips and about twenty-five acres of field grass, or to increase the number of his sheep stock on a farm of 400 to 500 acres at least twelve per cent. I have myself, on a meadow of 13a. 3r. 26p., kept on the spring grass, in April and May, 277 couples 33 days, and 11 cows 26 days, with a little less then ten pounds of hay per day per cow; after which there was cut from the same meadow at least two tons of hay per acre, the aftermath being fed by cows and horses. I have also mown part of a water meadow twenty-nine times in six consecutive years, the produce of which averaged annually during the six years a little more than forty tons of grass per acre—one year it produced more than forty-seven tons. In some seasons, when there is a failure of the turnip crop, the spring feed of water-meadows is exceedingly valuable. I have known it frequently let for £7 or £8 per acre, and in one instance I knew the spring feed of a water-meadow of 6½ acres let for £80, or a little more than £13 per acre." Mr. Squarry then proceeded to observe that the application of water-meadows to dairy purposes obtains to a very large extent in the neighbourhood of Salisbury. There were, indeed, large areas specially applied to this purpose. He then pointed out that in the meadows surrounding Salisbury, the cows, if they have calved, are turned into the meadows about the last week in March, or first week in April—at first, for a few hours at a time only. The grass produces a plentiful supply of milk, but it is necessary that cows should have some hay at night to counteract the otherwise too purgative effect of the grass. During the feeding of the meadows by cows, butter and the fatting of calves are the staple productions; as the season advances, however, good cheese is manufactured from them. If there is insufficient dry pasture to take the dairy cows on the meadow during the growth of the hay crop, one of the meadows is alternately fed instead of being mowed. It is, in this neighbourhood, unusual for meadows to be mowed more than once in the year, and for the most part the grass, after the hay crop, is consumed by cows and horses—a course generally considered compulsory, in consequence of the almost certain production of the rot, or flake, in the liver of sheep fed in any water-meadow after Midsummer. The value of the meadows in relation to arable land would be much increased if this result could in any way be mitigated or avoided. Mr. Combes' experience as to the frequent mowing of water-meads during the spring, summer, and autumn, teaches conclusively that where a plentiful supply of water is obtainable no decrease in the future crop is observed. The advantage may, however, be doubted where the supply of water is insufficient. He next alluded to the cost of cleansing the carriers, floaters, and drains, and watering the meadows, which, he observed, amounted to about 5s. per acre. The mode in which water-meadows influence the system of arable farming was next touched on, Mr. Squarry confining the attention of his hearers to the principles which govern the management of farms upon the chalk. On this head he observed: It would be a grave error to consider the management of our arable lands as devoted particularly either to sheep and dairy purposes, on the one hand, or, on the other, to corn farming; and yet there are periods of the year when both remarks would be fairly applicable. It is the mixed judicious application of sheep stock to the purposes of profitable feeding at the one time, and their employment as "dung carriers" to the distant fields at another, which constitutes what is supposed to be the right management of the hill-lands. To take, therefore, as illustrations, the two rotations of four fields which most frequently occur, let us suppose the first set of fields to be managed in the ordinary course of wheat, turnips, barley, and grass. This course is so identical with that which is current elsewhere, that it needs no further observation than that a catch-crop of rye, winter oats, or vetches, invariably precedes the turnip crop. The other rotation is one so peculiar to this district that it will probably be of more interest. It is as follows: First year, wheat; second year, barley; third year, half clover and rye grass, and half rye or vetches, followed by swedes or late turnips; fourth year, half old field, or old ley, and half forward turnips or rape. The half of the barley land, which is sown off to clover and rye grass, is mown for hay in the ensuing year, is fed through the autumn, and a moiety is then covered with long fresh straw or dung, and the sheep stock is penned upon this in the latter end of November and the early part of December, as soon as the folding for wheat is completed. The food which supports the sheep through this period, except in the event of an unusual crop of turnips, is hay supplied to them night and morning, and a spread or run over the downs for a few hours in the day, when they go for water. The average folding is about one and a-half sheep to a square hurdle, or thirty-six square feet, which is equal to about 1,860 sheep per acre per night. When the fold has passed over the land, it is either raftered or fallowed, and, after a cross-ploughing in March, is in capital condition for early turnips or rape preceding the wheat crop. The other moiety, of old field, is reserved for feeding about the first week in May, when the sheep leave the meadows. It is subsequently dunged and folded, and either planted to turnips or rape, or ploughed up, and the sheep folded upon the fallows, to consolidate them previous to the sowing of the wheat. The wheat crop, after both these systems of management, is usually very good. Let us now return to that portion of the barley field where no rye grass or clover was sown. In the early autumn it is sown with vetches, which are consumed on the land in the June and July of the next summer; thereafter swedes or turnips are drilled in, which stand over for feed until any period in the spring which may be most convenient, and frequently it happens where the meadows are early that the sheep can be penned on swedes or turnips. The land is then dunged from our yards, or from heaps which have been carted to the fields during the winter, and, with the addition of superphosphate, is drilled with early turnips, or rape, preceding the wheat crop. A modification of this latter system sometimes occurs by the substitution of a five for a four-field course, when a turnip crop intervenes between the wheat and barley, or the land, or a proportion, is sown with the barley to sainfoin, in which crop it remains for three years. The peculiarity of the second system just described consists chiefly in the sowing of barley after wheat, a custom so well known and appreciated in Wiltshire, and which has there stood the test of so much practice, that it is only to an audience of comparative strangers that anything like a defence of a rotation so apparently old-fashioned need be offered. Its application over a fair proportion of the medium arable land of this district is advantageous for the following reasons: First, it enables the farmer to sow his barley over a large area early, and with very little labour of tillage; secondly, the quality of the barley so grown is uniformly superior to that grown after turnips; thirdly, if the management for wheat has been what it should be, the bulk and quantity of corn grown are generally satisfactory, and, on an average of years, will quite compete with that grown after turnips, which latter is frequently injured through its late sowing; fourthly, it affords an excellent opportunity of cleansing the land—a process, with our system of frequent catchcrops, often troublesome and inconvenient to accomplish before turnips. The other leading points of this system are the large quantity of green food which is cheaply produced under it, and the admirable facility afforded for the consumption of such food at any period consistent with the farmer's convenience. Another advantage, not to be lost sight of, is that a forced and wasteful application of the turnips, for fear of losing the season for sowing barley, is avoided; nor, however thickly the sheep may be penned, is there any danger of thereby injuring the succeeding crop of turnips. It leads, moreover, to a more equable distribution of the horse labour throughout the year. The folding of the ewes on the old field, to which reference has been made, and the system of folding generally, may be regarded as peculiar to this district, and it may well happen that, in some measure, the system is attributable to the increased quantity of hay grown on a farm having a fair proportion of water meadow. It is practically a folding out of meadow during the winter with the produce of the summer growth; and taking the data supplied by Mr. Combes as to the area folded per acre from water-meadow, and charging the increased bulk of hay in excess of the spring feed against the cost of its manufacture and carriage, it may be assumed that its value as manure is quite equal to that of the spring fold, which is usually valued at 25s. to 30s. per acre. There is this further value in the summer produce when in the form of hay, that it is applicable to any period and locality. On farms where there are no water-meadows, the useful and beautiful sainfoin comes in to supply in great measure their absence. That it does supply such want is a recognised axiom; and although it cannot furnish in March or April the luxuriant herbage which then clothes our meadows, yet in the form of hay it contributes largely to the health and well-being of the stock. The proportion of land devoted to sainfoin in this district, on farms with a fair share of water-meadow, is about 10 per cent. on the area of arable land; where they are absent, it is about 15 to 18 per cent. He then gave a few statistics of the produce and mortality of the flocks, observing that a prejudice existed in favour of the present system with regard to sheep; but the following statement indicated a larger mortality, with a proportionately smaller produce, than was obtained from any other district or breed, the statistics of which are known. From a census taken on the 4th of May, during five consecutive years, it appears that the average produce of 10,600 ewes, in a district within a radius of ten miles of Salisbury, was 89 per cent. of lambs. The average mortality of ewes from Oct. 10th to May 4th was 4.85 per cegt The average mortality of ewe tegs, or hoggets, derived from the same district, and during the same period, was 2.75 per cent. It is believed that the conditions under which these numbers were obtained fairly represent the general circumstances of the flocks of the southern portion of this county. Mr. Squarry next proceeded to observe that how far these lamentable circumstances may arise from the largeness of the flocks, from the system of folding, or from occasional irregularity of keep, are questions worthy of the deepest consideration; and it may well be that the recognition of the general fact may tend to a mitigation of the evil, by public attention being directed to this point. He then concluded as follows:—The subject which has been so imperfectly treated affords a striking illustration of the power which man possesses to shape the form of external nature for his own advantage. If left to pursue their own course through the flat and gradually-widened valleys of this district, the pure streams would probably divide themselves into innumerable rivulets, flowing under the broad leaves of water plants, or winding lazily through a growth of rushy herbage, and forming over large spaces, and, at no distant intervals, shallow marshes, in which miasma would find a constant home. Warned by such circumstances, the inhabitants of the locality would probably abandon the shelter of the valleys, and fix their less convenient but healthier residences on the elevations of the hills. In contrast with this picture it is instructive to glance at the present position of the valleys, which lie around the city in long green lines of radiation. So far from being deserted by mankind, they are the principal seats of a vigorous population. The parish churches lie at short intervals in the midst, or on the very margin of the valleys, forming the links of a continuous chain of villages from the springhead to the mouth of the river. The mansions of the aristocracy, the comfortable residences of those who farm the land, and the cottages of the labourer are scattered over this surface of perennial verdure; whilst the waters themselves, and the magnificent tree vegetation, which results from the improved character of the soil, contribute frequently to the scene an aspect of beauty rarely surpassed in other counties. All this is referable to a conversion of a water naturally disposed to stagnate and permeate the soil, into a series of active streams, pouring their fertilizing masses rapidly, and at intervals, over the surface of the land. The system of irrigation which has been described is, doubtless, open to improvement; and at no distant date scientific investigations may throw light on the character and influence of the various streams, and the peculiar aptitude of certain soils to assimilate properties in water which may be artificially imparted to it. For the present it will be sufficient to express a hope that the ideas now rapidly laid before you may be the means of directing attention to spots of neglected valley land in this country; and the pleasing labour which the preparation of this paper has occasioned will be amply compensated if hereafter it should be found that the creation of a few acres of water meadow can be traced to this evening's reading.

Mr. Squarry expressed a hope that some gentleman present would promote a discussion upon the subject of his paper.

Mr. Read said he understood Mr. Squarry to say that growing barley after wheat had the effect of cleansing the land —a course to which they objected in Norfolk, because it had a tendency to make the land foul.

Mr. Squarry said they conceived in this neighbourhood that the course alluded to tended to cleanse the land. The process they adopted was first to "rafter" the land, which meant that it was ploughed diagonally, at an angle of about 45°. It was generally raftered about the latter end of November, and in December these rafters were dressed down, and the land fallowed up. That was the current system. If it was in a tolerably clean condition, by the running of the drags over these fallows about the first week in March, they got everything out, and the land went in in good condition about the latter end of March. Where it was foul, it usually received an additional ploughing. Then as soon as the rye or a crop of vetches was got off the land, it was ploughed for swedes, and there was not much time for cleansing it.

Mr. Read supposed, however, they would do it in autumn if the wheat stubble were foul.

Mr. Squarry: Certainly. But our horses are busier at this than any other period, preparing for our catch crops; for on a farm of acres of arable land we have to sow about 100 acres of vetches, rye, and winter oats, or barley before turnips, and that's why we drive it on as fast as possible at that time to get our work done.

Mr. Read: How many ploughings do you give your land before you sow swedes or turnips?

Mr. Squarry said their old ewes were very obstinate, especially after eating the young grass, and would not make clean work for them of the vetches, and their invariable practice therefore was after the vetches were off to use the drags and get as much off as possible. If the land happened to be clean and not much trodden by the sheep, one ploughing was enough. The soil in the lighter land was pressed and was always got into capital order by turnips or anything else. It received a second ploughing always if necessary, but one always secured them a very fair crop of swedes. He would not say that their crop of swedes was equal to those grown in districts where they had a thoroughly fine fallow. But the quantity of green food which comes into consumption for their sheep made a mass of consumptive food for stock not surpassed in any other county in England.

Mr. Rawlence said the system of one ploughing was assuming the land to be thoroughly clean, and if it was so, and was properly dressed, they got better swedes by that method than by any other.

Mr. Read: You said there was a great mortality amongst your sheep; do you apprehend this to be attributable to the system of severe folding you pursue in this district?

Mr. Squarry said he was happy to have his attention called to that, because it enabled him to introduce a matter which came under their notice that day at Wilton Park. Mr. Herbert then read a statistical description of the farm management under the superintendence of Mr. Robson, and a more interesting tabular statement of five years' farming it was impossible to find in any agricultural work they had ever met with. The statistics he (Mr. Squarry) had given them were obtained from a farmers' club in the neighbourhood, and extended only from the 10th October to the 4th of May; and taking into consideration the great area over which it extended. it was as accurate as could possibly be expected. But he would remark that Mr. Herbert's averages on his farm varied very widely from these, and were worthy of their deepest consideration; because when the stock on a farm like that at Wilton was managed in the best possible manner, and the results were such as they had heard, it taught them a lesson they ought not to neglect. The produce of lambs on Mr. Herbert's farm was 105 per cent., but the mortality of his ewes—from what cause he could not explain to them—was much heavier than theirs. Perhaps it might arise from the great danger to ewes in the lambing season in a higher condition. At any rate Mr. Herbert's average produce of lambs was 15 per cent. in excess of theirs, whilst his average mortality of ewes was about 1½ per cent. heavier. But he must remind them that whilst their average extended only from the 10th October to the 4th May, Mr. Herbert's extended over the entire year. The difference between the number of lambs reared by Mr. Herbert and on other farms would interest them all. There was another circumstance worthy of notice, namely, the small number of lambs raised on the farms in this county, compared with the number obtained from cross-breeds in Berkshire and Oxfordshire. With very few exceptions, the flock here consisted of one-third two-teeth, one-third four-teeth, and one-third six-teeth; and in some cases they were separated into four divisions, one-fourth being full-mouthed. The produce of lambs, after a cross with our old ewes, was 130 or 135 per cent., and the loss did not exceed 1 or 1½ per cent.

Mr. Read said they visited Sussex, and the fairs in this district, for ewes; but they never, he believed, by any chance got a very young one (laughter). He might say, however, that after keeping these ewes two or three years they got an average produce of 120 to 130 per cent.

Mr. Hording presumed that the number of lambs was in proportion to the keep of the ewes before the ram was put to them.

Mr. Squarry said, as a general rule, such would be the case. The ewes here were kept in the best possible condition before sale, and that would doubtless account for the large per-centage of lambs.

Mr. Rawlence explained that Mr. Read was in a great measure, right in supposing that the mortality amongst the sheep of this district was attributable to severe folding. They made them carriers of manure, and sometimes they were folded without any food at all, and at others had quite an excess. Iinstead of sowing half the arable land with corn, he (Mr. Lawrence) only sows one-sixth, which gives him a much larger supply of green food.

The Rev. E. James wished to know what was the maximum quantity of water a person ought to possess before incurring the expense of laying-out meadows; in reply to which

Mr. Squarry said the average quantity requisite here was 2,000 gallons per acre per minute. In some of their own meadows—not of first-rate character—he had found it average 2,900 gallons; but at the lower end of the valleys—where there was a much wider area, they watered with stems.

Mr. Acland was anxious for some further information as to the quantity of water used in these meadows. He would like to be made acquainted with the amount of money expended in laying them out, as some of them appeared to him, as he wandered over them to-day, to be large enough for floating a barge. A writer in the Society's Journal held that channels 4 inches wide and 3 inches deep were amply sufficient for every purpose, and he knew that Mr. Pusey laid out some meadows on that principle. The system in this district, he was aware, had prevailed for some time, and he did not presume to suppose that there was good reason for laying out their land in what he called asparagus beds. In Devonshire the land was laid out with only a slight fall, and the comparative merit of the different systems was information which the agricultural world particularly needed (Hear hear); and that information they could only obtain from practical men. (Cheers).

Mr. Rawlence explained that most of the meadows round about this city were laid out some 250 years ago, and it would be expensive now to re-arrange the size of the carriers. (Hear). He could not, for instance, remodel his own meadow at Bulbridge under something like 30*l.* an acre. Large carriers were certainly inconvenient, but the expense of alteration would scarcely justify the undertaking, however desirable it might be. He preferred having the gradient low, and rather than have them 1 in 100, he would prefer not having them at all.

After some further desultory discussion on irrigation and the effect produced on the water in its passage over the meadows, the question of sewage was introduced, upon which

Mr. Acland said it was one of the most important questions of the day in connection with agriculture, but nothing would ever be made of it until the farmers united heart and soul as one man to bring it to a practical conclusion (cheers). Some of our valleys were in a positively disgraceful state—ruinous to health, and impoverishing the land; and it was the imperative duty of the farmers of England to call, as one man, for a practical solution of a question so deeply affecting their interest.

The proceedings terminated with a unanimous vote of thanks to Mr. Squarey for his admirable lecture.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A Monthly Council was held on the 5th of August, present: Colonel Challoner, Trustee (in the chair), Earl of Powis, Lord Walsingham, Mr. Raymond Barker, Mr. Hodgson Barrow, M.P., Mr. Caldwell, Mr. Brandreth Gibbs, Mr. Howard, Mr. Pain (Mayor of Salisbury), Mr. Shuttleworth, and Mr. Wilson (of Stowlangtoft).

The following new members were elected:—

Beddard, John, Holloway House, Prestwood, Stourbridge
Botly, William, Martin, Salisbury
Clark, William Joshua, Rose Hill, Caversham, Oxon
Cotta, The Baron George, Stuttgardt, Germany
Cubitt, Alderman William, M.P., Penton Lodge, Andover
Estcourt, Edwin, Bowden Park, Chippenham
Featherstone, William, Sunley Hall, Kirby-moor-side
Gervis, Sir George Eliott Meyrick Tepps, Bart., Hinton-Admins, Christchurch, Hampshire
Insole, James Harvey, Llandaff-court, Cardiff
Johnson, Charles William, 37, Mincing-lane, London
Malet, Rev. W. Wyndham, Ardley Vicarage, Buntingford
Miller, Richard, 37, Mincing-lane, London.
Moody, Henry, Chartham, Canterbury
Nixon, John, Cardiff, Glamorganshire
Oldrin, Garrould, Rumburgh, Halesworth
Rowland, Alexander, Leagreen Farm, Eltham, Kent
Simeon, Sir John, Bart., Swainston, Isle of Wight
Smith, John, Marton Lodge, Bridlington, Yorkshire
Taylor, Simon Watson, M.P., New Park, Devizes
Price, John, Yew-tree House, Prestwood, Stourbridge
Walker, David, Bungay, Suffolk
Walker, Frederick James, Sandhutton, York
Wezele, The Count G. de, 22, Albemarle-street, London.

Finances.—Mr. Raymond Barker, chairman of the Finance Committee, presented the monthly report on the accounts, from which it appeared that the current cash balance in the hands of the bankers was £978; he also laid on the table the usual quarterly statements of account connected with the several financial branches of income and expenditure, and assets and liabilities, for the information of the members. The Council ordered that all claims on account of the Salisbury meeting should be examined and discharged in the usual course.

Conditions for Steam-Engines.—Mr. Shuttleworth and Mr. Howard having called the attention of the Council to the importance of a revision of the conditions affecting the construction of steam-engines and other machinery to be exhibited for prizes at the country meeting of next year, it was moved by Mr. Brandreth Gibbs, seconded by Mr. Caldwell, and carried unanimously, That the Implement Committee be desired to invite the respective opinions of all the implement-makers who have exhibited at the Society's Shows during the previous three years, as well as those of the Engineering-Judges and Consulting-Engineer. Colonel Challoner, as Chairman of the Implement Committee, gave instructions that a meeting of that Committee should be held on Tuesday the 3rd of November next, at 1 o'clock, for the purpose of receiving those opinions, and of reporting the recommendations of the Committee to the Council on the following day.

Chester Meeting.—The Local Prize Committees of the Society and the authorities of Chester having reported their concurrence in the arrangements to be made for the competition of local prizes at that city next year, amounting to upwards of £1,500, the Council authorised the Secretary to enter into the usual agreement with the mayor agreeably with the charter and bye-laws of the Society.

Communications were received from the Minister of Agriculture of France, M. Barral, M. Victor Borie, the Agricultural Societies of Belgium and Nassau, the Highland Society, Mr. Valentine, Mr. Leybourne Popham, and Mr. Sturgess.

The Council adjourned over the Autumn recess to the first Wednesday in November, granting to the Secretary and the clerks of the Society the usual vacations within that period.

THE SALISBURY MEETING.

The following is the official report of the number of visitors during the trial week:—

On Tuesday—To the Implement Yard, at 2s. 6d. each		969
On Wednesday—To the Implement Yard, at 2s. 6d. each	2,623	3,935
Ditto ditto To the Cattle Yard (after the Judges had finished), at 5s. each	1,312	
On Thursday—Both Yards, at 2s. 6d. each		14,004
On Friday—Both Yards, at 1s. each		18,439
Total		37,347

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

MEETING AT GLASGOW.

With a steady determination of purpose, equally honourable to either, the Highland and the Yorkshire Societies have again so contrived as to come into collision with each other. Of course, as far as their immediate supporters are concerned, this is a matter of very little moment; or surely more pains would have been taken to avert what has now something of the authority of custom in its favour. The Scotch go to their Scotch show, and the Yorkshiremen to the Yorkshire. Both, however, are of sufficient importance to command something more than a comparatively local interest and influence. We have no hesitation in saying that if only so arranged as to follow on one after the other, a number of visitors, both British and Foreign, would gladly avail themselves of the opportunity to go the round of these meetings. Say, that a clear week after Salisbury they should have been summoned to York, thence to Glasgow, and so gradually to Waterford—one week after the other, with a spare day or two in each for the sight-seeing of the several districts. The Irish Society's fixture would have exactly suited this plan, while we can only say that we have done our part to further such a proceeding. Six or eight months since we warned Mr. Maxwell and Mr. Hannam of what was coming. The Yorkshire Society, however, has a standing rule on the subject; and the Highland could not hold a gathering during any week that included in its Kalends "the twelfth of August."

This kind of opposition is to be regretted for many reasons. People never learn so readily nor profit so much as when they can get out of a beaten path. The Agricultural Society of Scotland is peculiarly remarkable for features of its own. In these times of railway despatch and facility, our English shows come very much to resemble each other — the same sort of Shorthorns, Southdowns, and so on. But when the Southron crosses the Border, he enjoys a treat that has all the zest of novelty to recommend it. He sees—not by twos or threes, but by whole classes — the famous polled cattle; contrasting, as they do, with their more lively brethren of the Highlands—that wondrous combination of strength and activity, the light-stepping, smart-looking horses of the Clyde. And then again, with these, and with quite as national characteristics to distinguish them, he marks the curious black-faced twisted-horn sheep—in their turn to be compared with the grand, heavy Cheviots; each showing in its way what Scotland can do on its mountains and its lowlands. By this, too, the country has many a Shorthorn herd famous in history; and far longer still, its own Ayrshires, to show for milk what the others do for meat.

The Glasgow Meeting was said to be *the* most successful exhibition of such strong points in the Highland Society's meetings. It was certainly, to use a favourite phrase of the farmer, one of the most "even" shows we ever remember to have witnessed. Of all the many sections and varieties, there was not a bad or inferior class on "the Green;" and very few that were not numerously filled and closely contested. To open with the catalogue, there were a hundred and ninety-five Ayrshires entered, with three prizes to each section, and some further special commendations to prove how good the judges considered they were. These Ayrshire cows have wonderful udders; although with those most experienced in the breed the bulls had here the call. The first prize bull especially was a great favourite; while justice must add as much for some of the prize cows. But this bull even went far to endanger, at least with his own friends and "neebors," the popularity of the Shorthorn premium. Those at all learned in such like lore will not require to be told what animal this was. The first-prize bull at Salisbury was entered as the property of a gentleman who represents in Parliament a district adjacent to Glasgow. It was so very probable that the same bull would be again entered at the Highland Show, and equally likely that he would again be successful. As the best Shorthorn that has now been out for many years, Mr. Stirling's "John o' Groat" of course took the first prize here, with a very good bull from Ireland for his second. The class, however, was made up with some not very symmetrical stock, although the judges were enabled to add a special commendation to the bronze medal. Mr. Stirling exhibited another bull in the yearling class, that would seem to promise almost as well as his aged one. He has gone to another good man for this animal—Mr. Douglas, of Athelstaneford, who himself, as usual, had it all his own way with the cow and heifer classes. Ringlet, and Rose of Athelstane, were both at Salisbury, although their relative merits were reversed here. We will not, though, be quite sure even of the official prize-list, as we saw the two—they stood side by side—change places during the day. Mr. Douglas also won with the brother to Rose, a two-year-old bull unnoticed in the South. Indeed, our reports of the Salisbury Meeting will say a good deal for the Shorthorns at Glasgow—the perfection of Mr. Stirling's bull, and the excellence of Mr. Douglas's cows more particularly. We might have added to these a word for Mr. Wetherell's; but though he entered with the Scotch, he naturally enough exhibited at the York Meeting.

Of the native breeds, the polled Angus, Galloways, and Highlanders, the mountaineers mustered in the greatest force. There was a very large entry of Highland cows and heifers, shown in a fair unprepared state, and just the wild shaggy sort one would expect to find them. Many of these were pronounced to be very good. Of the Angus, in a somewhat short entry, Lord Southeske sent a really splendid bull, ranking well with anything in the yard. The whole lot, indeed, were to be commended, as keeping up the repute of a breed that, even in these days of improved agriculture, quite hold their own. If confined to their own resources, the Scotch might do their best lands well enough with Angus cattle and Cheviot sheep. Still the Glasgow show of the Angus was not equal to the many perfect animals sent last year to Inverness. Although separated into two classes, the difference between the Angus and the Galloway is not remarkable—the latter, the less fancied of the two, is said now to be going somewhat out of favour.

For four different sorts all well represented, the sheep show was perhaps, considered as a whole, the best-filled division of the catalogue. It numbered, beyond a few Cotswolds that could be scarcely taken into account, Leicesters, Cheviots, Black-faces, and Southdowns. Of all these the Cheviots are the most remarkable, and on their own ground, perhaps, the best. Some of the rams were really wonderful, uniting with size and symmetry a certain degree of power, generally observable in the male animal, though not so often in sheep. We have the opinion of one of the judges to record them as a very excellent entry. Next in favour in the North comes the Leicester—bred, as is now the fashion, not quite so pure as he has been. The Southdowns, moreover, are evidently on the improvement. Mr. Hutchison crosses directly with Mr. Jonas Webb's flock, and his second prize was bred at Babraham. The Duke of Richmond materially strengthened this section with some of his beautiful Downs. One ram—which the judges justly preferred to a far bigger sheep by his side—was a perfect picture of a Down—as handsome in his way as the horned Highlanders to be encountered a little further on. As sheep that, originally at any rate, had to "earn their living" off short-commons, we question whether his Grace and Mr. Blacklock do not give us the true metal of what a Down or a hill-side sheep should be.

As with the short-horns, some of the best pigs came from Salisbury—Mr. Harrison to wit. Still the entire show was a capital one, with the poor brutes, as usual, most shamefully over-fed. Had either of the show-days been anything like as hot as the weather we have had lately, many of them must have died where they lay. As it was, they were protected and screened by all kinds of contrivances; and some so much so as to be scarcely visible. In an exhibition of breeding-stock, we repeat, this is something worse than an absurdity. At Salisbury many of the pigs actually did die from being over-fattened to an extent which prevented their bearing the least fatigue; and, although such secrets are generally pretty well kept, a gentleman kindly sent us an account of how many score one of these dead-weights realized. Of course this was something equal to the most wonderful fat pig ever shown in a fair. A nice animal to give a premium to, as a sample of what breeding-stock should be!

The show of horses at the Highland Society's meeting is still a show of draught horses, and a most extraordinary one it is. On the very banks of the Clyde it was but natural to expect a good entry of Clydesdales. There numbered at Glasgow thirty-three aged stallions, twenty-three three-year-old stallions, twenty-nine two-year-olds, and twenty-seven yearlings, with equally strong classes of mares and fillies. The great majority, if not all these, were Clydes, and the chief attraction amongst them the aged horses. The Clydesdale, in fact, developes almost beyond anything else—without it be a game-cock—as he grows on to maturity. And it is almost impossible to suppose that many of the young stock could ever ripen into the magnificent animals they do. It is a difficult thing to judge a foal of any sort, while it must be far more than usually hazardous with these. Even judging the old horses must have been a task of some difficulty. They ran more generally good than we ever remember them; and a horse almost covered with plates, in commemoration of the premiums he had taken, was not even commended. The first prize horse is a very favourable example of the breed—in colour a dappled brown, very gaily marked, four white legs and a bald face, with quick ready action, immense power and weight, generally good symmetry, and may-be just a little light in the arm. We repeat, the Clydes here were "very much of a muchness;" and we noticed few of those two big ends with nothing between them, that we have had recommended to our attention before now, as Clydesdales.

There were beyond these a couple of thorough-bred stallions, one of which was commended — a famous chesnut pony, with just cross enough of the Shetland not to spoil him, also worthily distinguished—some capital cob stock, "suitable for milk-carts," the terms on which they were entered—and some cart-horses, chiefly from Glasgow, exhibited in their working harness, the finest work-a-day dress we ever did see. We are assured, however, that the men have an especial pride in this gear, and that their horses always turn out as smart as they came to the show.

It is not only as an exhibition of stock that the Glasgow Meeting will rank as an unusually good one. The advance in the implement department was at once apparent. Although by no means a perfect collection of agricultural machinery, the Highland Society has never yet afforded its members so instructive a lesson in this branch of a farmer's studies. It is one, moreover, they require beyond all others. We believe, as a rule, the Scotch are only just beginning to appreciate the advantages of improved machinery. When at the Judges' dinner on Wednesday, we asked our Cheviot friend what he thought of the show of implements, his answer was one we should rarely hear now in England: "Weel, I ken boot leetle aboot'em. I'm just a sheep mon." And so it is with the majority. They are just sheep men, or stock men, or horse men, leaving ploughs and drills and harrows very much to chance or to the local makers, who, so far, have not done a vast deal to amend them.

At Glasgow, however, we must repeat, there was a marked advance in what the home manufacturers had to exhibit; while these entries were considerably strengthened by such implements as Howard's and Bentall's ploughs, Hornsby's thrashing machines, Clayton and Shuttleworth's steam-engine, and Richmond and Chandler's chaff-cutters. Through the agency, moreover, of Mr. Palmer, of Stockton, nearly all these were intended for trial. Hornsby's machine, in fact, took the premium; but the Bedford plough was unfortunately smashed on its way to the field, and another interesting illustration of what the wheel-plough can do lost to those who took to it so kindly a year or two since at Berwick. Richmond and Chandler, it is only right to say, manfully entered their own wares. They had too, their reward, taking a prize for everything they exhibited, and meeting with a sale altogether unprecedented. Mr. Bentall, again, was his own showman, and with similar success. The English ploughs were also in demand, and there is no doubt but such an introduction as the Highland Society affords may do much for both the contracting parties—our manufacturers from the south on the one side, and the farmers from the north on the other. The chief objection the former have to attending these meetings is the peculiar manner in which this part of the ground is arranged. Every implement for trial stands in its own class—all the general purpose ploughs in a row together—grubbers in another—drills in a third, and so on. In fact you run on, number for number, just as you would through a lot of Shorthorns, or Ayrshires. Convenient to a certain extent as this may be for the visitor, it is anything but so to the exhibitor. A firm must have a good many heads and hands to be in so many places at once; and the consequence is, that business is said to be sadly interfered with. There are of course no such well-furnished stands as we see at our shows in the South, and but few have any head-quarters at all. Nothing indeed, neither high-prized animals, nor high-priced implements, is covered in, or in any way protected from the elements. It would be hard to realize a more depressing scene than a Highland Society's Show on a very wet day—such, for instance, as we had in Edinburgh, luckily the day after the meeting came to a close.

As something of a novelty, with not much else to recommend it, the Society offered this year a prize of fifty pounds for a new reaper. It would recognise no improvements, however good, in any implement which had already been exhibited. There must be a new one. The natural probability was, such a prize, like our Society's thousand for a new guano, would never be claimed. But there was a claimant for this, after all. A new reaper was entered. The Americans brought down their now famous "Eagle" mowing machine. And when they brought it down they could get no trial for it. There was no grass to test it with; and, after a turn or two in some stuff called tares, the occupier obligingly hinted that he did not want them cut! Now it is very palpable that, for the Society's own credit, there should be no mistake about this proceeding. If the fifty-pound offer is not mere make-believe, they must put "the Eagle" to work at once—no matter that the meeting is over. Let two or three judges be recalled, and if the machine is worthy of the premium let it be awarded. It will never do for the Highland Society to stop with such a lame story as this.

Money can be no object. There never was a meeting that has paid so well; and seldom was a city, tolerably well populated of itself, so crowded with visitors. What with the Highland Society and the Celtic Society, with business, pleasure, shows, "games," balls, and dinners, it was as hard to get a room as an hour to oneself. The Society's dinner took place on the Thursday. A magnificent structure called the City Hall was devoted to the entertainment; and what with good arrangements, excellent catering and ready attendance, its success was perfect. We scarcely remember anything of the sort so thoroughly well done. Above six hundred sat down, with the Duke of Hamilton, in the last year of his office, as president, and Lord Eglinton as croupier. The Dukes of Atholl and Montrose, Lord Strathallan, and a number of distinguished men, including Sir Archibald Allison, were also present; with an imposing array of "judges," elevated even above the head of the chairman himself. Amongst these the only Englishman was Mr. Torr, of Aylesby, who, in returning thanks for his own national Society, made the agricultural speech of the evening. He dwelt upon what we might all learn from one another: how he had grown better turnips since his first tour in Scotland; and how, on the other hand, the Scotch might improve by a lesson in hay-making. Mr. Torr was most favourably received, and his remarks frequently referred to by other speakers. The hay-making or marring was found "proven" the next day, in the journey from Glasgow to Edinburgh, where almost every other field was studded with slovenly cocks, to be delivered hereafter into a yet more slovenly rick-yard. We travelled with three gentlemen of the district, who acknowledged at every fresh opening the justice of the charge.

On the Wednesday evening—almost a little too close upon the judges' dinner—Professor Anderson delivered a lecture, which we report in our supplement of today, on the adulteration of manures. Its chief value, however, was perhaps the experiments by which it was illustrated. Unfortunately these cannot be transferred.

Altogether the Glasgow Meeting went off with great eclât—with fine weather and fine company. The Queen of the Netherlands, who was on a visit at Hamilton, did the Show the honour of an inspection on the Thursday. Her Majesty was escorted by a band of kilted bagpipers, who gave to the national airs that peculiar effect only to be achieved on the national instrument. If Scotland's foes would not "turn and flee" at the sight of her sons, they certainly would at the sound of them.

PRIZES FOR CATTLE, &c.

AYRSHIRE.

JUDGES.—John Baird, of Lochwood, Clydesdale Cottage, Uddingstone.
Alexander Buchanan.
Pat. Graham Barns, of Limekilns, East Kilbride.
Peter Drew, Carmyle, Tollcross, Glasgow.
James Pollock, Raws, Kilmarnock.

Best Bull calved before the 1st of January, 1855, 20*l.*, to Ivie Campbell, Dalgig, New Cumnock; and the Silver Medal to John Parker, Nether Broomlands, Irvine, as the breeder.

Second best, 10*l.*, to John Stewart, Strathaven.

Third best, the Bronze Medal, to James Rennie, Kessington, East Kilpatrick.

Specially commended.—David Tweddie, Castle Crawford Abington.

Best Bull calved after the 1st of January, 1855, 20*l.*, to John Stewart, Strathaven.

Second best, 10*l.*, to John Parker, Nether Broomlands, Irvine.

Third best, the Bronze Medal, to Wm. M'Adam, Kepculloch, Balfron.

Specially commended.—James Bowman, Rosebank, Cambuslang.

Best Bull calved after the 1st of January, 1856, 10*l.*, to John Parker.

Second best, 5*l.*, to George Paton, Bankhead, Renfrew.

Third best, the Bronze Medal, to James Rennie.

Best Cow in Milk, calved before the 1st of January, 1854, 15*l.* and Silver Medal as breeder, to James Frew, Balmalloch, Kilsyth.

Second best, 8*l.*, to Alexander Wilson, Forehouse, Kilbarchan.

Third best, the Bronze Medal, to John Parker.

Best Cow in Milk, calved after the 1st of January, 1854, 15*l.*, to John Stewart; and the Silver Medal to John Pollock, Blackhouse, Mearns, as the breeder.

Second best, 8*l.*, to Robert Markland, Bogside, Port-Glasgow.

Third best, the Bronze Medal, to Duncan M'Farlane, Torr, Helensburgh.

Best Cow in Calf, of any age, 10*l.* and Silver Medal as breeder, to John Parker.

Second best, 5*l.*, to Hugh Crawford, Beith.

Third best, the Bronze Medal, to John Robertson, South Hillington, Paisley.

Best Heifer calved after the 1st of January, 1855, 10*l.*, to James Stark, Garngad Hill, Glasgow.

Second best, 5*l.*, to James Morton, Townhead of Drumley, Tarbolton.

Third best, the Bronze Medal, to William Muir, Hardington Mains, Biggar.

Best Heifer calved after the 1st of January, 1856, 8*l.*, to George Pender, Dumbreck, Kilsyth.

Second best, 4*l.*, to John Stewart.

Third best, the Bronze Medal, to Alexander Fleming, Avon Mills, Hamilton.

SHORTHORNS.

JUDGES.—Anthony Cruickshank, Aberdeen.
William Torr, Aylesby, Great Grimsby, Lincoln.

Best Bull calved before the 1st of January, 1855, 20*l.*, to William Stirling of Keir, M.P., Dunblane; and the Silver Medal to F. H. Fawkes, of Farnley Hall, Otley, Yorkshire, as the breeder (John o'Groat).

Second best, 10*l.*, to Sir Frederick W. Heygate, Bart, Bellarena, Ireland (Nimrod).

Third best, the Bronze Medal, to Thomas Bell, Ballinshae, Kirriemuir.

Specially commended.—Charles Lyall, Kincraig, Brechin.

Best Bull calved after the 1st of January, 1855, 20*l.*, to James Douglas, Athelstaneford, Drem (Sir James the Rose).

Second best, 10*l.*, to Alexander Bethune, of Blebo, Cupar-Fife (Young California).

Third best, the Bronze Medal, to John Hunter, Laith, Castle Douglas (Lord Garlies).

Best Bull calved after the 1st of January, 1856, 10*l.*, to William Stirling, of Keir, M.P. (Hiawatha).

Second best, 5*l.*, to James Douglas (Benedict Balco).

Third best, the Bronze Medal, to Thomas Willis, Manor House, Carperby, Bedale, Yorkshire (Dred).

Best Cow of any age, 15*l.*, to James Douglas (Ringlet).

Second best, 8*l.*, to James Douglas (Rose of Athelstane).

Third best, the Bronze Medal, to William Stirling, M.P. (Miss Nightingale).

Best Heifer calved after the 1st of January, 1855, 10*l.*, to Messrs. Turnbull, Bonhill Place, Dumbarton.

Second best, 5*l.*, to William Tod, Elphinstone Tower, Tranent.

Third best, the Bronze Medal, to Messrs. Turnbull.

Best Heifer calved after the 1st of January, 1856, 8*l.*, to James Douglas (Bride of Lammermoor).

Second best, 4*l.*, to James Douglas (Cherry Queen).

Third best, the Bronze Medal, to James Gulland, Newton of Wemyss, Kirkcaldy (Christabel).

Specially commended.—James Gulland, Newton of Wemyss (Lady Munster).

POLLED ANGUS OR ABERDEEN.

JUDGES.—Alexander Bowie, Mains of Kelly, Arbroath.
William M'Combie, Tillyfour, Aberdeen.
Walter M'Culloch, Kirkclaugh, Gatehouse.

Best Bull calved before the 1st of January, 1855, 20l. and the Silver Medal as breeder, to the Earl of Southesk, Kinnaird Castle.

Second best, 10l., to Robert Walker, Porlethen Mains, Aberdeen.

Third best, the Bronze Medal, to Robert Walker.

Best Bull calved after the 1st of January, 1855, 10l., to John Collie, Ardgay, Forres.

Second best, 5l., to James Leslie, Thorn, Blairgowrie.

Third best, the Bronze Medal, to George Brown, Westerton, Fochabers.

Best Cow of any age, 10l., to Robert Walker.

Second best, 5l., to the Earl of Southesk.

Third best, the Bronze Medal, to the Earl of Southesk.

Best Heifer calved after the 1st of January, 1855, 8l., to George Brown, Westerton, Fochabers.

Second best, 4l., to John Collie.

Third best, the Bronze Medal, to George Brown, Westerton, Fochabers.

POLLED GALLOWAY.

Best Bull calved before the 1st of January, 1855, 20l., to Rob B. Wardlaw Ramsay, of Whitehill.

Second best, 10l., to John Cunningham, Whitecairn, Castle Douglas.

Third best, the Bronze Medal, to William Irving, Barndennock, Dumfries.

Best Bull calved after the 1st of January, 1855, 10l., to James Beattie, Newbie House, Annan.

Second best, 5l., to James Beattie.

Third best—*No competition.*

Best Cow of any age, 10l., to James Graham, Meikle-Culloch, Dalbeattie.

Second best, 5l., to Allan Pollok, of Faside, Newton-Mearns.

Third best, the Bronze Medal, to James Gillespie, Annan Park, Lockerby.

The best Heifer calved after the 1st of January, 1855, 8l., to James Shennan, Balig, Kirkcudbright.

Second best, 4l., to James Shennan.

Third best, the Bronze Medal, to James Graham, Meikle-Culloch, Dalbeattie.

HIGHLAND.

JUDGES.—John Macfarlane, Faslane, Helensburgh.
John S. Menzies, of Chesthill, Aberfeldy.

Best Bull calved before the 1st of January, 1855, 20l., to Richard D. Campbell, of Jura; and the Silver Medal to Neill Malcolm, of Poltalloch, as the breeder.

Second best, 10l., to Neill Malcolm.

Third best, the Bronze Medal, to Dugald Sinclair, Kilchamaig, Whitehouse, Argyle.

Best Bull calved after the 1st of January, 1855, 10l., to Alexander M'Donald, Ballochallan, Callander.

Second best, 5l., to Neill Malcolm.

Third best, the Bronze Medal, to the Right Hon. Duncan M'Neill, of Colonsay, Lord Justice-general.

Best Cow of any age, 10l., to Neill Malcolm.

Second best, 5l., to the Marquis of Breadalbane.

Third best, the Bronze Medal, to Allan Pollok.

Best Heifer calved after the 1st of January, 1854, 10l., to Allan Pollok.

Second best, 5l., to Richard D. Campbell, of Jura.

Third best, the Bronze Medal, to the Marquis of Breadalbane.

Best Heifer calved after the 1st of January, 1855, 8l., to Donald Maclaren, Corrychrone, Callander.

Second best, 4l., to Allan Pollok.

Third best, the Bronze Medal, to Allan Pollok.

EXTRA CATTLE.

THE JUDGES COMMENDED

An Ayrshire Cow, aged 5 years, belonging to Alexander Fleming, Avon Mills, Hamilton.

HORSES.

FOR AGRICULTURAL PURPOSES.

JUDGES.—Robert Findlay, Springburn, Baillieston, Glasgow.
George Falconer, Kinloch, Ladybank.
John Gibson, Woolmet, Dalkeith.
Dugald Napier, Glasgow.
Allan Pollok, of Faside, Newton Mearns.
James Steedman, Boghall, Roslin.
John Waugh, St. John's Kirk, Biggar.

Best Stallion foaled before the 1st of January, 1854, 30l., to Samuel Clark, Manswrae, Bridge of Weir; and the Silver Medal to John Stevenson, Rickartfield, Beith, as the breeder.

Second best, 15l., to Peter Crawford, Damgogack, Strathblane.

Third best, the Bronze Medal, to John L. Gow, Raith, Kirkcaldy.

Best Entire Colt foaled after the 1st of January, 1854, 20l., to Alexander Galbraith, Croy Cunningham, Killearn.

Second best, 10l., to Archibald Turnbull, Newton, South Queensferry.

Third best, the Bronze Medal, to Andrew Logan, Crossflat, New Monkland.

Best Entire Colt foaled after the 1st of January, 1855, 15l., to Samuel Clark.

Second best, 8l., to Sir M. R. Stewart, of Ardgowan, M.P.

Third best, the Bronze Medal, to Wm. Stirling, of Keir, M.P.

Best Entire Colt foaled after the 1st of January, 1856, 10l., to James Salmon, Benston, Paisley.

Second best, 5l., to Andrew Warnock, Bereyards, Bishopbriggs.

Third best, the Bronze Medal, to Archibald Coubrough, Carwood, Biggar.

Best Mare (with Foal) foaled before the 1st of January, 1854, 20l., to George Davidson, Dean Park, Balerno.

Second best, 10l., to David Fleming, Westhorn, Glasgow.

Third best, the Bronze Medal, to James Russell, Shawhill, Mearns.

Best Mare (in foal) foaled before the 1st of January, 1854, 15l., to Thomas G. Buchanan, Wellshot, Cambuslang.

Second best, 8l., to Peter Drew, Carmyle, Tollcross, Glasgow.

Third best, the Bronze Medal, to Thomas Morrison, Middlefield, Falkirk.

Best Filly foaled after the 1st of January, 1854, 10l., to Mrs. Hay, Duntyblae, Kirkintilloch.

Second best, 5l., to David Riddell, Kilbowie, Duntocher.

Third best, the Bronze Medal, to Andrew Renfrew, Barrance, Mearns.

Best Filly foaled after the 1st of January, 1855, 8l., to John Crawford, Millstonford, West Kilbride.

Second best, 4l., to David Riddell.

Third best, the Bronze Medal, to Dugald Napier, Port Dundas.

Best Filly foaled after the 1st of January, 1856, 6l., to George Tudhope, Colinhill, Strathaven.

Second best, 3l., to Alexander Wilson, Forehouse, Kilbarchan.

Third best, the Bronze Medal, to George Davidson, Dean Park, Balerno.

Best Draught Horse or Mare in Harness, 10l., to John Bryson Glasgow.

Second best, 5l., to Dugald Napier, Port Dundas.

Third best, the Bronze Medal, to John Bryson, Glasgow.

Best Horse or Mare, not exceeding 15 hands high, suitable for milk carts of heavy draught, 8l., to George M'Murray, North Mains, Houston.

Second best, 4l., to William Paisley, High Walton, Renfrewshire.

Third best, the Bronze Medal, to Andrew Pollock, Muirhouse, Eaglesham.

Best Horse or Mare, not exceeding 14½ hands high, suitable for milk carts of light draught, 8l., to Alexander Dunlop, Glasgow.

Second best, 4l., to Andrew Warnock, Bereyard, Bishopbriggs.

Third best, the Bronze Medal, to A. B. Armour, Meiklehill, Kirkintilloch.

Commended.—James Yuill, Newlands, East Kilbride.

EXTRA HORSES.

THE JUDGES COMMENDED

(*Highly*) Stallion, Robert Wilson, Durn, Portsey (winner of the First Prize for Cart Stallions at the Inverness Meeting).

Thorough-bred Stallion, James Fairbairn, Kelso (Cyclops).

Pony, The Hon. A. H. M. Moreton, of Largie.

SHEEP.

LEICESTER.

JUDGES.—James Geddes, Orbliston, Fochabers.
Robert Hardie, Harrietfield, Kelso.
Thomas Scott, Spittal, Berwick-on-Tweed.

Best Tup, not more than four shear, 10l., to Thomas Simson, Blainslie, Lauder.

Second best, 5l., to Thomas Cockburn, Sisterpath, Dunse.

Third best, the Bronze Medal, to Lord Panmure.

Best Dinmont or Shearling Tup, 10l., to Thomas Simson.

Second best, 5l., to Thomas Cockburn.

Third best, the Bronze Medal, to Thomas Cockburn.

Best pen of Five Ewes, not more than four shear, 8l., to Thomas Mason, Pallinsburn, Coldstream.

Second best, 4l., to Thomas Mason.

Third best, the Bronze Medal, to John Collie, Ardgay.

Best pen of Five Shearling Ewes or Gimmers, 8l., to Thomas Mason.

Second best, 4l., to George Murray, Mount Pleasant, Berwick.

Third best, the Bronze Medal, to Thomas Mason.

CHEVIOT.

JUDGES.—William Gunn, Glendhu, Golspie.
David Mundell, Ross-shire.
James Oliver, Borthwickbrae, Hawick.

Best Tup, not more than four shear, 10l., to Thomas Elliott, Hindhope, Jedburgh.

Second best, 5l., to James Bryden, Moodlaw, Langholm.

Third best, the Bronze Medal, to James Bryden.

Best Dinmont or Shearling Tup, 10*l*., to Thomas Elliott.
Second best, 5*l*., to John Carruthers, Kirkhill, Moffat.
Third best, the Bronze Medal, to John Carruthers.
Best pen of Five Ewes, not more than four shear, 8*l*., to James Bryden.
Second best, 4*l*., to Thomas Elliott.
Third best, the Bronze Medal, to Andrew Oliver and Son, Hawick.
Best pen of Five Shearling Ewes or Gimmers, 8*l*., to Lord Panmure.
Second best, 4*l*., to Thomas C. Borthwick, Hopsrig, Langholm.
Third best, the Bronze Medal, to Thomas Elliot.

BLACKFACED.

JUDGES.—Alexander Denholm, Baitlaws, Biggar.
Duncan Mitchell, Blairknockie, Luss.

Best Tup, not more than four shear, 10*l*., to Adam Blacklock, Minnygap, Moffat.
Second best, 5*l*., to John Watson, Nisbet, Biggar.
Third best, the Bronze Medal, to the Hon. Lady Menzies, Rannoch Lodge.
Best Dinmont or Shearling Tup, 10*l*., to David Foyer, Knowe Head, Campsie.
Second best, 5*l*., to James Watson, Mitchelhill, Biggar.
Third best, the Bronze Medal, to Adam White, Blindewing, Biggar.
Best pen of Five Ewes, not more than four shear, 8*l*., to James Brydon, Kinnelhead, Moffat
Second best, 4*l*., to James Drife, Barr, Sanquhar.
Third best, the Bronze Medal, to Allan Pollok, of Faside.
Best pen of Five Shearling Ewes or Gimmers, 8*l*., to Allan Pollok.
Second best, 4*l*., to Captain Kennedy, of Glenapp, Ballantrae.
Third best, the Bronze Medal, to Donald M'Laren, Corrychrone, Callander.

SOUTHDOWN.

JUDGES.—Andrew Bell, Amble Hope House, Acklington.
Hugh Watson, Keillor, Coupar Angus.

Best Tup, not more than four shear, 10*l*., to John Hutchison, Monyruy, Peterhead.
Second best, 5*l*., to John Hutchison.
Third best, the Bronze Medal, to the Duke of Richmond, Gordon Castle.
Best Dinmont or Shearling Tup, 10*l*., to the Duke of Richmond.
Second best, 5*l*., to the Duke of Richmond.
Third best, the Bronze Medal, to John Hutchison.
Best pen of Five Ewes, not more than four shear, 8*l*., to John Hutchison.
Second best, 4*l*., to the Duke of Richmond.
Third best, the Bronze Medal, to Robert Scott Skirving, Camptown, Haddington.
Best pen of Five Shearling Ewes or Gimmers, 8*l*., to John Hutchison.
Second best, 4*l*., to the Duke of Richmond.
Third best, the Bronze Medal, to John Hutchison.

LONG-WOOLLED SHEEP OTHER THAN LEICESTER.

JUDGES.—Thomas Scott, Spittal, Berwick-on-Tweed.
Robert Hardie, Harrietfield, Kelso.

Best Tup, not more than four shear, 10*l*., to Robert Scott Skirving.
Second best, 5*l*., to the Duchess of Gordon, Huntly.
Third best, the Bronze Medal, to Lord Kinnaird, Rossie Priory.
Best pen of Five Ewes, not more than four shear, 8*l*., to Lord Kinnaird.
Second best, 4*l*., to the Duchess of Gordon.
Third best, the Bronze Medal, to Lord Kinnaird.

EXTRA SHEEP.

THE JUDGES COMMENDED

Alex. Macdonald, Strathmashie, Laggan (Blackfaced Ram, winner at Inverness Meeting).
John Lorn Stewart, of Stronvar, Campbeltown (three Shearling Tups).
(*Highly*) James Aitchison, of Adderston, Haddington (three-shear Down Tup, winner at Inverness).
Robert Scott Skirving (six Ewes—three winners at Inverness).

SWINE.

JUDGES.—John Curror, Comiston, Edinburgh.
James Murray, Mains of Fasque, Fettercairn.

Best Boar, large breed, 8*l*., to John Harrison, jun., Heaton Norris, Stockport.
Second best, 4*l*., to James Skinner, Woodside, Aberdeen.
Third best, the Bronze Medal, to W. H. Brown, of Ashley, Ratho.
Best Boar, small breed, 8*l*., to Jonathan Brown, Aspatria, Cumberland.
Second best, 4*l*., to John Harrison, jun.
Third best, the Bronze Medal, to Adam Dunn, Tranent.
Best Sow, large breed, 6*l*., to John Harrison, jun.
Second best, 3*l*., to Sir Frederick W. Heygate, Bart., Ballerena.
Third best, the Bronze Medal, to John Gibson, Woolmet, Dalkeith.
Best Sow, small breed, 6*l*., to James Skinner.
Second best, 3*l*., to Robert Harrison Watson, Bolton Park, Wigton, Cumberland.
Third best, the Bronze Medal, to John Arklay, Powmill, Brechin.
Commended.—James Allen, Westmains, Stonehouse.
Best pen of Three Pigs, not exceeding eight months old, 4*l*., to Jonathan Brown.
Second best, 2*l*., to James Skinner.
Third best, the Bronze Medal, to Robert Glover, Shandon, Drymen.

THE JUDGES OF POULTRY WERE—

John Higson, Preston.
James Murray, Mains of Fasque, Kincardineshire.
Robert Thomson, Blue Vale Street, Glasgow.

DAIRY PRODUCE.

JUDGES.—John Craig,
John Gurnon,
Geo. Lindsay, } all of Glasgow.
Robt. Osborne,
Francis Richardson, Edinburgh.

Best sample of cured butter, 5*l*., to Alexander Aitkenhead, Byars, Hurlet, Glasgow.
Second best, 3*l*., to Alexander Graham, Summerston, East Kilpatrick.
Third best, the Bronze Medal, to John Steell, Heatheryknowe, Old Monkland.
Best sample of powdered butter, 5*l*., to John Morton, Claddens, Duntocher.
Second best, 3*l*., to Alexander Aitkenhead, Byars, Hurlet, Glasgow.
Third best, the Bronze Medal, to Robert Morton, Dalmuir, West Kilpatrick.
Best sample of fresh butter, 5*l*., to Mrs. Clark, Drumbie, Cathcart.
Second best, 3*l*., to Walter Weir, Lochfaulds, Cadder.
Third best, the Bronze Medal, to Robert Morton, Dalmuir, West Kilpatrick.
Best two sweet milk cheeses, 5*l*., to John Mackie, Larkshiels, Canonbie.
Second best, 3*l*., to William Smith, Townhead, Newmilns, Kilmarnock.
Third best, the Bronze Medal, to James Wilkie, Craignethan Castle, Lanark.
Best two skimmed milk cheeses, 5*l*., to John Cochrane, Overside, Strathaven.
Second best, 3*l*., to Samuel Mitchell, Strath Campbelton.
Third best, the Bronze Medal, to Archibald Gall, Whitehill, Glassford.
Best two English cheeses—*no entry.*
Best two imitation English cheese, 5*l*., to Thomas Coldwell, Coldstream, Beith, for Cheddar cheese.
Second best, 3*l*., to John Mackie, Larkshiels, Canonbie.
Third best, the Bronze Medal, to William Dickie, Girthhill, Ardrossan, for North Wiltshire.

IMPLEMENT PRIZE LIST.

JUDGES.—Alexander J. Adie, Engineer, Glasgow.
James Aitken, Cranston Hill Foundry.
Peter Drew, Carmyle, Tolcross.
John Gibson, Woolmet, Dalkeith.
Arthur Mather, Nether Place, Newton Mearns.
John Miller, Polmont.
Hugh Morton, Leith Walk, Edinburgh.
James Steedman, Bogue Hall, Roslin.
James Stirling, C.E., Edinburgh.

Best two-horse plough for general purposes, 3*l*., to George Ponton, Woolston, Linlithgow.
Commended.—William Miller, Airntully, Stanley, Perthshire.
Best trench or deep-furrow plough, 3*l*., to George Ponton, Woolston, Linlithgow.
Best subsoil plough for two horses, 4*l*., to Robert Law, Shettleston, Glasgow.
Best subsoil plough, for moor or stony land, for three or four horses, 4*l*., to E. H. Bentall, Heybridge, Maldon, Essex.
Commended.—James Kirkwood, Tranent.
Best double mould-board plough for forming drills, 3*l*., to George Ponton, Woolston, Linlithgow.
Commended.—Robert Fullarton, Loans, Troon.
Best ribbing or drill-paring plough—*no award.*
Best two-horse grubber or cultivator, 4*l*., to James Kirkwood, Tranent Foundry, Tranent.
Commended.—Jacob Mains, Houston.
Best drill-grubber for green crops, 2*l*., to James Stewart, Kirksteps, Coupar-Angus.
Commended.—William Gray, Cambusnethan, Wishaw.
Best Norwegian harrow, 4*l*., to James Kirkwood, Tranent.
Best consolidating land roller, 5*l*., to Wm. Cambridge, Bristol.

Commended.—Wm. Wallace and Sons, Crossroads, Kilmaurs.

Best pulverizing land roller, 5*l.*, to James Suttie, Inchture.

Best land presser for preparing seed bed for grain, 5*l.*, to Smith Brothers and Co., Glasgow.

Best ribbing machine, 2*l.*, to James Kirkwood, Tranent.

Best harrows for heavy land, 3*l.*, to Robert Law, Shettleston.

Best harrows for light land, 3*l.*, to E. H. Bentall, Heybridge, Maldon, Essex.

Best common swing-trees or draught-bars, 1*l.*, to William Gray, Cambusnethan, Wishaw.

Commended.—Alexander Blue, Eastfield, Mearns.

Best equalizing swing-trees or draught-bars, 1*l.*, to Robert Law, Shettleston.

Commended.—Andrew M'Kerrow, Beansburn, Kilmarnock.

Best horse-hoe for drilled grain crops, 6*l.*, to Mrs. Thomas Sheriff, Westbarns, Dunbar.

Best broad-cast sowing machine for grain and grass, 6*l.*, to Mrs. Thomas Sheriff, Westbarns.

Commended.—John Irvine, Perth, and James Simpson, Peterhead.

Best drill sowing machine for grain, 6*l.*, to Mrs. Thomas Sheriff, Westbarns.

Commended.—Edington & Duncanson, West Barns, Dunbar.

Best sowing machine for turnips, 4*l.*, to Charles Hay, Freelands, Ratho.

Best sowing machine for turnips with manure—*no competition.*

Best dibbling or drop sowing machine for turnips with manure —*no entry.*

Best sowing machine for mangold wurzel, 4*l.*, to James Suttie, Inchture.

Best three-row sowing machine for beans, 4*l.*, to Kemp, Murray, and Nicholson, Haddington.

Best one-row sowing machine for beans, 1*l.*, to James Suttie, Inchture.

Best dry manure distributing machine—*no entry.*

Best Liquid manure distributing machine, 4*l.*, to Isaac James, Cheltenham.

Commended.—James Suttie, Inchture.

Best liquid manure pump, 2*l.*, to David Falconer, Paisley.

Commended.—A. and W. Smith and Co., Glasgow.

Best straw cutter for hand labour, 2*l.*, to Richmond and Chandler, Salford.

Commended.—Hill and Smith, Dudley.

Best straw cutter for power, 3*l.*, to Richmond and Chandler, Salford.

Commended.—Hill and Smith, Dudley.

Best turnip cutter for sheep, 2*l.*, to Hill and Smith, Dudley.

Best turnip cutter for Cattle, 2*l.*, to Richmond and Chandler, Salford.

Commended.—Richmond and Chandler, Salford.

Best turnip cutter for sheep, attachable to a cart, 3*l.*, to James Kirkwood, Tranent.

Best oil-cake bruiser for hand labour, 2*l.*, to Richmond and Chandler, Salford.

Commended.—Wm. Wilson and Son, Berwick-on-Tweed.

Best grain and oil-cake bruiser for power, 4*l.*, to Richmond and Chandler, Salford.

Commended.—John Whitmee and Co., London.

Best grain grinder, attachable to thrashing power, 4*l.*, to Richmond and Chandler, Salford.

Commended.—A. and W. Smith and Co., Glasgow, and John Whitmee and Co., London.

Best machine for digging potatoes, 4*l.*—*award postponed until after trial.*

Best machine for singling turnips—*no award.*

Best machine for pulping turnips, 4*l.*, to E. H. Bentall, Heybridge, Essex.

Best root washer, 2*l.*, to Richmond and Chandler, Salford.

Best steaming apparatus for preparing food, 5*l.*, to Smith Brothers and Co., Glasgow.

Commended.—Richmond and Chandler, Salford.

Best feeding troughs for byres, 1*l.*, to John Robson, Cook Street, Glasgow.

Commended.—Hernulewicz, Main, and Co., Glasgow.

Best feeding troughs for sheep, 1*l.*, to Hill and Smith, Dudley.

Best sheep fodder rack, 2*l.*, to William Kirkwood, Duddingston Mills, Portobello.

Commended.—James Kirkwood, Tranent.

Best one-horse farm cart, 4*l.*, to Robert Law, Shettleston, Glasgow.

Best light spring cart, 4*l.*, to Robert Law, Shettleston, Glasgow.

Best harvest cart, 4*l.*, to Kemp, Murray, and Nicholson, Haddington.

Commended.—James Angus, Parkhead, Glasgow.

Best apparatus for conveying implements on the farm, 3*l.*, to Robert Law, Shettleston, Glasgow.

Best stone or iron stack pillars, with frame-work, 2*l.*, to Young, Peddie, and Co., Edinburgh and Glasgow.

Best horse stubble or hay rake, 2*l.*, to John Palmer, Stockton-on-Tees.

Best scythe for general purposes, 1*l.*, to James Payne, Kirkcudbright.

Best improvement on any part of the thrashing machine—*no competition.*

Best thrashing machine, adapted for two or more horses, 6*l.*, Williamson Brothers, Kendal.

Best machine to thrash, shake, clean, and prepare grain for market, 10*l.*, to Richard Hornsby and Son, Grantham, Lincolnshire.

Best hummeller for attachment to a thrashing machine, 3*l.*, to A. and W. Smith and Co., Glasgow.

Best dressing fanners, 4*l.*, to John Richardson, Milbourn Cottage, Carlisle.

Commended.—A. and W. Smith and Co., Glasgow.

Best weighing machine for grain, indicating measure and weight, 4*l.*, to Smith Brothers and Co., Glasgow.

Best weighing machine, indicating from 1 ℔. to 2 tons, 4*l.*, to R. Forshaw and Co., Liverpool.

Commended.—James and Malcolm, London.

Best churn worked by hand, 2*l.*, to Thomas Standing, Preston.

Best churn worked by power, 3*l.*, to David Cassels, Newton-Mearns.

Best cheese press, 2*l.*, to J. and T. Young, Newton-Green, Ayr.

Best curd cutter for dairy purposes, 1*l.*, to William Wallace and Son, Crossroads, Kilmaurs.

Best general set of dairy utensils, 1*l.*, to Philip Hunter, Nicholson Street, Edinburgh.

Best field gate, constructed entirely of iron, 1*l.*, to Hernulewicz, Main, and Co., Glasgow.

Best field gate, not constructed entirely of iron, 1*l.*, to Hernulewicz, Main, and Co., Glasgow.

Best gate for dunghill, to open at different elevations—*no award.*

Best iron hurdles for cattle fence, 1*l.*, to Hill and Smith, Dudley.

Best iron netting for sheep fence, 1*l.*, to Hernulewicz, Main, and Co., Glasgow.

Best traverse divisions, rack and manger, for farm stables, 1*l.*, to Hernulewicz, Main, and Co., Glasgow.

Commended.—John Robson, Cook Street, Glasgow.

Best farm harness, 1*l.*, to Hay Downie, saddler, Corstorphine.

Best tiles and pipes for field drainage, 1*l.*, to John Anderson, Shettleston, Glasgow.

Best glazed socketed pipes for sewerage, 1*l.*, to Robert Brown, Ferguslee, Paisley.

Commended.—P. B. Mure Macredie, of Perceton, and John Robson, Glasgow.

Best tools for cutting field drains—*no entry.*

Best tools for cutting open drains in hill pastures—*no entry.*

Best general set of hand implements for the farm—*no competition.*

Best self-registering dynamometer for draught—*no entry.*

Best self-registering dynamometer for fixed machines—*no entry.*

EXTRA IMPLEMENTS.

THE JUDGES COMMEND THE FOLLOWING :—

Sheep-dipping apparatus, Thomas Bigg, London.

Chain harrow, John Cartwright, Shrewsbury.

Road cleaning machine, Robert Ferrier, Jedburgh.

General collection of farm gates, railings, and fences, Hernulewicz, Main, and Co.

Moore's floating-ball washing machine, William M. Hill, Glasgow.

Centrifugal drying machine, William M. Hill, Glasgow.

Weighing machines, James and Malcolm, London.

Cattle van, P. M'Pherson and Son, Edinburgh.

Howard's patent plough, John Palmer, Stockton-on-Tees.

Howard's patent pointed harrows, John Palmer, Stockton-on-Tees.

Sheep-dipping apparatus, Joseph Rawdon, Jedburgh.

Collection of fire-clay articles, John Robson, Glasgow.

Cross's portable fire engine, J. P. Rodger, Glasgow.

The Tweeddale and other ploughs, A. and G. H. Slight, Edinburgh.

Basket carriage, T. R. Storey, Nottingham.

Four-wheeled phaeton, George Thomson, Stirling.

General collection of implements and wire-work, Young, Peddie, and Co., Edinburgh.

Patent portable steam engine, Alex. Chaplin, Glasgow (commended specially on account of its cheapness).

Eight-horse power portable steam engine, Richard Hornsby and Son, Grantham, Lincolnshire.

Combined reaping and mowing machine, B. Moore and Clarke, London.

"ON THE METHODS BY WHICH THE FARMER CAN BEST PROTECT HIMSELF FROM THE ADULTERATION OF MANURES":

A LECTURE BY PROFESSOR ANDERSON,

Delivered during the Highland and Agricultural Society's meeting at Glasgow.

The Honourable the Lord Provost occupied the chair, and introduced the lecturer in a few appropriate sentences.

Professor ANDERSON said: Although no one will doubt the importance of the subject selected for my address on the present occasion, many persons may be inclined to think that it has so frequently been brought under the notice of the farmer that it must be considered in some respects exhausted, and that I am only about to go over the beaten track, and to repeat once more what has been already frequently and better said by others. I trust, however, it will be at once apparent that the points to which I propose to direct your attention possess at least some degree of novelty, and may lead to useful practical results, in so far as it is my intention to endeavour to teach the farmer how he may rely upon himself for detecting the more frequent and obvious adulterations to which manures are subject, for checking to a certain extent the correspondence between the substance he buys and the analysis by which it was sold, and to show that there are means by which this can be effected in particular cases with considerable certainty, and without any material difficulty; in short, I propose to show the extent to which the farmer may make himself independent of the chemist in determining the grosser adulterations of manures, and to lay down some definite rules by which any person may detect them; and at the same time to set bounds to his self-reliance, by directing attention to the fact that, though it may often be possible for him to resort with success to simple observations and experiments, there are also numerous instances demanding an amount of skill and experience which each individual cannot be expected to acquire for himself. No one who is at all conversant with the way in which manures are too often purchased will fail to recognise the importance of such knowledge, or can doubt that a greater familiarity with the distinctive characters of different manures would lead to the detection of many cases of adulteration which now pass unnoticed; and as these occur most commonly in small purchases, when it is not thought necessary to have recourse to analysis, the loss falls most severely upon small farmers, who are the class least able to bear it. Persons of extensive experience, and who are in the habit of frequently examining manures, are generally so familiar with the appearance of genuine samples that their suspicion is excited by anything unusual; but even they may be often misled; for the eye is a very fallacious guide, and adulterators know but too well that it is easy to mislead those who rely upon it, and hence it becomes necessary to call in the aid of some simple tests for the purpose of disclosing what the unassisted senses do not enable us to detect. If these difficulties are encountered by those whose attention is constantly directed to the quality of manures, the position of a farmer who once a-year buys the small quantity he requires becomes intelligible, and the advantage he would derive from a precise knowledge of the appearance of genuine manures, and still more from the possession of simple modes of detecting impurities, may be easily conceived. That such knowledge may be acquired by the farmer I am fully convinced, but at the same time the difficulties which attend it must not be overlooked, and it is peculiarly necessary for me to guard against misapprehension in this respect, and to bring prominently forward, in the most distinct language, the points in regard to which we must expect to meet with uncertain or deceptive results. The principal difficulty which besets the whole subject lies in the complexity of such manures and the absence of distinctive characters, which either form a bar to adulteration, or at least limit the number of substances which can be used for that purpose without detection. The great importance of such properties may be illustrated by reference to some familiar substance, such, for instance, as loaf-sugar, which, as we at once see, would have to be adulterated with some substance of very peculiar properties; for not only must it be white and tasteless, but it must possess that peculiar granular crystalline texture which we see in loaf-sugar, and also be capable of adding to the grains of sugar in such a manner that the whole may be made up into loaves; and as there is no cheap substance possessing these properties, the adulteration of loaf-sugar is a practical impossibility. But it is different if the sugar is sold ground, or in the form of sugar-plums; for then the crystalline texture, which is so invaluable a characteristic and so incapable of imitation, is lost, and any white powder may be mixed with it without detection; and hence chalk, gypsum, and other substances, are actually used for this purpose. It will at once occur to every one that these substances may be detected by throwing the mixture into water, when the sugar dissolves, and leaves the adulterating material in the form of a white powder at the bottom of the vessel. By means of this simple experiment we test the purity of the substance examined; and it is my intention to explain the nature of similar, though not always equally simple, methods of examination, which are applicable to some of the more common manures. In order that the amount of information which it is possible for an individual to acquire for himself may be fully understood, it is necessary for me, in the first place, to point out the difference between testing and analyzing a substance, in regard to which much misapprehension exists; and this may be most easily done by means of a single experiment, which will save much circumlocution. I have here two glasses containing water, and supposing we are desirous of ascertaining whether they contain lime in solution, it is only necessary to add to both a small quantity of this solution, which contains a substance called by chemists the oxalate of ammonia, when it is found that the one remains clear and the other becomes muddy, because the lime it contains is made to pass into the form of an insoluble white powder, wich soon deposits, or, as we say in chemical language, precipitates to the bottom of the fluid. In this experiment we have obtained a result which enables us to assert, with the most absolute certainty, that lime exists in one of these fluids; and we have applied a test and thus proved its presence, although we have obtained no information as to its quantity. It is possible, indeed, when two fluids are compared with one another, to form a rough estimate from the amount of muddiness, and to say that the one contains a large and the other a small quantity of lime; but the conclusion arrived at in this way would be very imperfect and fallacious; and where definite information is required on this point, it is necessary to proceed on a different principle, and by means of an experiment which cannot be shown here, for it extends over many hours, to determine the exact quantity. When this is done, we are said to have made an analysis; and the difference between testing and analyzing a substance lies in this—that the latter deals with quantities, and is therefore more precise and complete, while the former indicates only the presence or absence of some particular constituent. It is obvious, however, that, provided we know the impurities likely to be met with in any article, it is only necessary to make use of the tests by which they are distinguished, and if we prove their absence we at once substantiate the purity of the substance examined. In making this experiment we go upon the assumption that the article when genuine must be perfectly free from all foreign matters; but in actual practice it is found that very few commercial articles are in this predicament, but are generally supplied only in a state of approximative purity, and we are not entitled to condemn a substance as adulterated merely because the test indicates an impurity; but it becomes necessary so far to modify the mode of testing as to make allowance for the quantity of foreign matter which may be reasonably expected to exist in the article, and a more complicated system of testing must be employed. In point of fact, the process must partake, to a certain extent, of the nature of an analysis, and must of necessity in some cases acquire a degree of complexity which places it beyond the power of anyone except those who have acquired some chemical knowledge. Still, where the article consists, or ought to consist, entirely of one single substance, these difficulties are far from insurmountable; but, when they are a complicated mixture of several, which may vary in their relative proportions, it frequently becomes impracticable to arrive at any satisfactory result, except by means of a formal analysis. That complexity is the rule and simplicity the exception with manures, is a matter with which we are all familiar, and hence it will be easily understood that there are substances which, from their very nature, it is impossible to test. A manure is purchased because it contains certain substances which serve as food for the plants; but they contain these mixed, in almost every instance, with a large quantity of useless matters, which are there either because they cannot be economically separated, or because they are necessary for the purpose of converting the useful constituents into a marketable condition. Thus guano is bought chiefly for the sake of its ammonia and phosphates, and the other matters are of little or no value, but, as they cannot be separated, must be taken by the purchaser; and so likewise sulphate of ammonia is bought for the ammonia it contains, and the sulphuric acid has little if any manurial value, but cannot be dispensed with, as it renders the ammonia transportable without loss. When the value of manure is determined by one only of its constituents, as is the case with sulphate of ammonia and some few other substances, it is comparatively easy to ascertain whether they are genuine or not; but when they contain several such substances, which may vary within very wide limits in their relative proportions, the difficulty becomes materially enhanced, and it is necessary to depend upon tests which do not always afford conclusive proof, but rather tend to awaken suspicion. When it is further added that many manures contain naturally small quantities of the very substances most likely to be employed for adulterating them, we see additional reasons why it cannot always be practicable to ascertain with certainty, by the use of tests alone, whether a manure is genuine or not. In point of fact, we know that all guanos contain sand, most of them common salt, and particular varieties contain sulphate and carbonate of lime, and these substances are almost the only ones which are used for adulterating that manure. It must be obvious, from what has been said, that the testing of manures requires some judgment, and cannot be reduced to a perfectly mechanical system. It depends indeed, in no small number of cases, upon the observation of what may at first sight appear very trifling matters; but they are such as are easily mastered by any one who has the habit of observing, and is inclined to take advantage of any opportunities he may meet with of examining samples, so as to give him confidence in the accuracy of his own results. In proceeding to point out the mode of detecting adulterations in the individual substances used as manures, I shall commence with those which are of simple composition, and proceed gradually to those of greater complexity. I shall select, as the first, sulphate of ammonia, because it is a substance which presents no difficulties in testing. Supposing a person were desirous of ascertaining the purity of a sample of that manure, he will proceed, in the first instance, to note its colour; and if that be pale, and it be made up of distinctly crystalline fragments, he will have, at all events, one favourable character on which to depend; but even if it be dark coloured, he will not hurriedly infer that it is not genuine, although he will naturally direct greater attention to all the other points of the examination. He will next see that it is uniform in colour throughout; for if it contains white grains or lumps, obviously different from the greater part of the mass, he will be entitled to suspect that it is a mixture; and in order to make sure of this, he may pick out a few pieces, taste them, and reserve some more for further experiments. He may then take a quantity of the substance, spread it upon a piece of blotting paper, and inverting a saucer or small box over it, leave it for some hours. If at the end of that time the blotting paper has become very damp, the sample probably contains more than the usual quantity of moisture. The next process consists in placing a small quantity of the sulphate upon a fire-shovel, or better still, in a small porcelain capsule or cup, such as I now show you, and placing it over a clear fire until it ceases to give off fumes. If pure it will almost entirely volatilise, and leave behind only a very small quantity of sand or other fixed matters. A genuine sample of sulphate of ammonia contains from 94 to 97 per cent. of the pure salt, and rarely more than 1 per cent. of non-volatile matters, so that the residue in this experiment ought to be very small. If the sample stands all these tests it may be considered genuine, but it must be particularly noticed that it may contain a considerably smaller quantity of sulphate without these tests unequivocally indicating the fact, but it would still be genuine although inferior in quality; and it must be distinctly understood once for all, that tests do not enable us to distinguish the relative qualities of different samples where all are genuine. For this purpose analysis is absolutely necessary, and its importance will be understood when it is borne in mind that a diminution of only 1 per cent. in the quantity of ammonia corresponds to a reduction in value of nearly 15s. per ton. The observations just made regarding the sulphate are equally applicable to the muriate of ammonia; but as that substance is rarely employed as a manure, and is more expensive than the sulphate, over which it has no advantages, it is perhaps scarcely necessary to refer to it. It is necessary, however, for me to guard against the application of these tests to a substance sold as muriosulphate or sulpho-muriate of ammonia. That manure is obtained during a particular manufacturing process, and always contains a larger quantity of fixed salts, and must not on that account be considered as adulterated; although, from the very nature of the process by which it is prepared, its quality must necessarily be very variable. It will be noticed that the volatility of the salts of ammonia is the most valuable means of determining their purity, and it is important because it is an unusual character; and if they be adulterated at all, it is only fixed substances, such as common salt, which can be employed: and hence it is advisable, when the sample does not appear uniform, to pick out what seems to be foreign matters, and to heat them separately for the purpose of ascertaining whether they are volatile. The next manure to which I shall refer is the nitrate of soda, which has peculiar claims upon our attention; for though the numbers of substances which can be used for adulterating it is extremely restricted, it invariably contains common salt in greater or less quantity. The source of this impurity depends upon the mode in which nitrate of soda occurs. Every one is aware that it is imported from Peru (though commonly called Chili saltpetre), but it is not generally known that it is there found in beds containing from 40 to 80 per cent., along with small quantities of common salt and other impurities, and is prepared for the market by treating the matter removed from the beds with water, and then evaporating until crystals are deposited. By this process the larger proportion of the salt is separated; but a certain quantity, dependent upon the amount of care which has been exercised, is always left; and hence, even where adulteration is not suspected, it becomes of importance to be able to determine the quality of the article purchased. Nitrate of soda, like sulphate of ammonia, possesses the invaluable characteristic of a crystalline texture, which precludes the use of most mixtures, insomuch so that there are really only common salt, and possibly sulphate of soda, which could be mixed with it. The use of the latter is, however, very unlikely, because, as usually met with in commerce, its appearance is very different from that of the nitrate of soda, and could scarcely be mixed with it without exciting suspicion. In examining a specimen of nitrate of soda, the farmer will naturally direct attention, in the first instance, to its dryness, which he endeavours to determine in the same manner as has been recommended for sulphate of ammonia. He will then look to its general appearance, which he will expect to find extremely like that of raw sugar, being composed of small grains which should be uniform in appearance, and have a brownish, but not too dark a colour. If the eye distinctly detects a mixture of two kinds of grain, one whiter than the other, the presence of common salt as an adulteration may be suspected; and if some of the whiter grains separated from the mass prove to have a purely saline taste, the probability of this is increased. As most of the commercial forms of common salt are much whiter than nitrate of soda and have never a brown tint, the importance of attending to this point will be obvious; but it must be understood that the appearance of a few white grains is of no importance, especially if their taste differ from that of salt. The presence of common salt is easily detected by means of a solution of nitrate of silver (or lunar caustic), which immediately produces a curdy white deposit in any fluid containing it. But the mere appearance of this precipitate is no proof that the nitrate has been adulterated, for I have here a solution of a perfectly genuine specimen, which, as you perceive, immediately gives it. If any use is to be made of it, it must be applied in a peculiar mode, and I have contrived a method of using it, which can be employed by any person. This method has been already described in the Transactions of the Society; but as it appears to have attracted comparatively little attention, and bears very much upon the present subject, I trust I may refer to it again now. It is founded on the great chemical principle, that if a sufficient quantity of nitrate of silver be added to common salt, that substance is entirely decomposed and no longer exists in the fluid. This fact can be easily illustrated by reference to the experiment already made, in which it was shown how common salt could be detected; for it is only necessary now to add to the solution a further quantity of nitrate of silver, when it is seen that no further precipitate is formed, the salt originally present having been decomposed by the previous addition. By reference to well-known chemical laws, which are unnecessary for me to explain now, it is found that 29 grains of nitrate of silver are required to decompose one grain of salt. Upon this principle a solution is made, containing 290 grains of nitrate of silver in an imperial pint of water, and its strength is then such that a fluid ounce of it decomposes exactly five grains of salt. The use of this solution for the purpose of determining the purity of nitrate of soda depends on the fact that when of good quality it always contains less than 5 per cent. of salt, so that if we take 100 grains of it dissolved in water, and add a measured ounce of the silver solution, we ought to have decomposed the whole of the salt it contained, and none should be left in the fluid; whereas, if there be more than 5 per cent., the excess above that quantity will remain, and be detected by a further addition of nitrate of silver. The mode in which the experiment is made is very simple. One hundred grains of the sample to be examined are weighed in a pair of common apothecaries' scales, and put into a bottle capable of containing about half a pint. Four ounces of warm water (rain water is best) are then poured into the bottle, which is shaken until the nitrate is dissolved. The experimenter then carefully examines the insoluble matter, which should be very small in quantity, not exceeding 1 per cent, and consisting of grains of sand; and a little experience will enable him to ascertain by inspection whether the quantity is excessive. An ounce of the nitrate of silver solution is then measured in a common glass measure, and poured into the bottle, which is shaken violently for some time, and then allowed to stand at rest for five or ten minutes, when the white curdy matter deposits and leaves the supernatant fluid nearly or altogether clear. When this is the case, a few drops of nitrate of silver are added, and if the fluid remains clear and shows no further milkiness, then the sample must have contained less than 5 per cent. of salt, and is of excellent quality. But should it become muddy, another ounce measure of the nitrate of silver is added, the bottle shaken, allowed to stand until clear, and the clear fluid again tested with a few drops of the nitrate, and if it remains clear, then the sample contains more than 5 and less than 10 per cent. of salt. Should it still give a precipitate, the same manipulations are gone through again as often as may be requisite, until the clear fluid cease to become muddy. Every ounce of nitrate of silver which has thus been used corresponds to 5 per cent. of salt, so that if three ounces had been added there must be from 10 to 15 per cent. of impurity and so on over. In this way the experimenter can always ascertain within 5 per cent. the amount of impurity. But it would probably not be advisable for him to go beyond the first additions; and should he find that there is more than 5 per cent., then he should suspect that his sample is inferior, and have it carefully analyzed. It is important to notice that, by this method of testing, we proceed by steps of 5 per cent., and that, for instance, no distinction will be made between a sample containing 6 and another containing 9 per cent. of salt; but it is obvious that any degree of precision may be arrived at, provided we add the solution of nitrate of silver, not by whole ounces, but by smaller quantities, for every fifth of an ounce must correspond to 1 per cent. The objection to using it in this way, however, lies in the delay consequent in waiting between each addition; but it is very easy to make an exact experiment for the purpose of checking the correspondence between the article delivered and the analysis by which is was sold. Thus, supposing the analysis to bear that the sample contains 3·5 per cent. of salt, it would only be necessary to add three-quarters of an ounce of the nitrate of silver; and if that precipitated the whole of the salt, then the result is satisfactory. It is, in fact, only necessary to take a little more of the nitrate than is requisite to precipitate the whole of the common salt or chloride of sodium stated in the analysis, and to ascertain whether it has actually done so by observing whether the solution remains clear when a few drops more of the nitrate are added. I have enlarged thus much on the detection of common salt, because it is the chief adulteration of nitrate of soda, against which it is necessary to guard. I have already alluded to sulphate of soda as a possible adulteration, although I have never seen it, and suspect it could scarcely be used without exciting suspicion. It would be possible, however, to detect it by a process similar to that used for salt, employing a solution of 171 grains of the substance called chloride of varium in a pint of water; but it is not so convenient, because the precipitate formed does not deposit so rapidly, and it would be necessary to leave the fluid for ten or twelve hours between each addition. Nitrate of potash may be tested by means of the same solution of nitrate of silver. As that sold for agricultural use is generally very inferior, and often contains large quantities of sulphates and other salts, great care must be exercised during the process. We now come to the most important and extensively employed of all manures, namely, guano; and with it we meet with increased difficulties, for we pass from definite substances, such as those we have just treated of, to another which is far from uniform; for we have guano or all kinds, from Peruvian, containing 16.5 per cent. of ammonia, and 22 to 25 per cent. of phosphates, to Saldanha Bay, containing only 1.5 per cent. of the former and above 60 of the latter, and all genuine, that is to say, all exactly as they are imported, though, of course, varying very widely in quality. We lose the definite standard which is possessed by the simple cnmpounds, and hence the testing a guano must of necessity be less definite; and we are forced to rely upon a variety of different observations, from the combination of which a probable conclusion can be drawn. These observations apply with less force to Peruvian guano, which, though variable in quality, within pretty wide limits, cannot be adulterated without producing such alterations in its composition as can be very readily detected; and hence, when deciding upon the quality of a guano, it is necessary to draw a short line of demarcation between it and all other varieties. In examining a sample of Peruvian guano, it is necessary first to attend to the colour, which should be pale. If it is dark, the sample is probably damp; and if, when a handful is strongly squeezed, it coheres into a mass, this is still more probable. It should contain lumps, having a rather paler colour than the mass of the guano, when they are broken across; and sometimes they are white, and have a crystallized texture. The entire absence of lumps is always a suspicious circumstance; but adulterators are now so well aware of the importance attached to them, that great care is taken not to break them down, and their presence is therefore no guarantee that the guano is genuine. The observer will next fill a bushel measure with the guano, and weigh it; and if the weight exceeds 72lbs. the guano is probably adulterated. But by far the most conclusive test of adulteration is one which approaches to an analytical process, although it is one which can be performed without difficulty. It depends upon the fact that in a genuine Peruvian guano the moisture and organic matter make up two-thirds of its whole weight; and as these are volatile at a red heat, it follows that when burnt it should leave an ash not exceeding one-third of its weight. For this experiment a small porcelain cup or capsule is required; and after this has been accurately counterpoised, by means of sand or any other matter, 20 grains of the guano are weighed into it. The capsule is then placed in a hot place by the side of a fire, and when it has become hot it is carefully placed upon the red-hot coals on a clear fire, and left there for fifteen or twenty minutes, and is then removed and allowed to cool as gradually as possible, so as to avoid cracking the capsule, and weighed again. The residue ought to weigh about 7 grains; and if it exceeds 8 the guano is certainly adulterated. The value of this test depends upon the fact that all the substances used to adulterate guano—such as sand, sulphate of lime, chalk, &c., &c.—are fixed in the fire, and as they are generally used very liberally, the chances are that the quantity of residue is materially increased—in point of fact, it will probably range from 10 to 14 grains; that is to say two-thirds of the guano remain in place of one third. This is by far the most accurate and conclusive method of testing a Peruvian guano; but it must be distinctly understood to apply to that variety only. When any of the other kinds are examined, it is important to bear in mind that the colour is a character of very little value; as a general rule, indeed, it is desirable that they should be pale and of a brownish rather than a grey colour, but no conclusions can be drawn from this as to whether it is damp or not. The best method of testing is to burn a small quantity in a capsule until the organic matter is completely burnt off; and though no conclusions can be drawn from the proportions of fixed and volatile matters, it is advisable to take always about the same quantity, which may be as much as will lie on a shilling, so that the observer may be able to institute some sort of comparison between different samples. When burnt the residue should be white; if it is brown or reddish like brickdust, the sample is probably either adulterated or of a very inferior kind. It is then shaken out into a wine glass or other convenient vessel, and about half a teaspoonful of water poured upon it, and as soon as it has become thoroughly moistened about a teaspoonful of muriatic acid (spirit of salt) is added. If it effervesces the guano contains chalk (carbonate of lime), or has either been adulterated with that substance, or is one of the inferior varieties which contain it naturally. If it does not effervesce the glass is left in a warm place for an hour or two, and then a little more acid and water are added, and it is again allowed to stand. The whole should now be dissolved, with the exception of a few grains of sand. If the guano stands all these tests, it is in all probability genuine; but of its quality we get no information, for it may be worth £7 up to £10, or even £12 per ton, if a phosphated guano, and from £12 to £15 if Peruvian, according to the proportions of its valuable constituents; that, of course, can only be decided by an accurate analysis, without which no prudent man will purchase a guano, but he will take care to make the experiments we have just described with the analysis in his hand. Thus, if he find that the ash of his guano effervesces on the addition of acid, and no mention is made of carbonate of lime in the analysis, his suspicions will naturally be awakened. So, likewise, he will be able to form a rough guess as to the correspondence between the sand he finds and that stated in the analysis; but it will be necessary for him to be careful should the guano contain sulphate of lime, part of which will, in the method of treatment just described, remain undissolved and mixed with the sand. For ascertaining the presence of the latter substance, however, there is no satisfactory test which can be put into the hands of the farmer. The chemist uses chloride of varium for detecting it, but the mere precipitation by means of that substance is not conclusive in the case of a guano, as it may contain alkaline sulphate, which gives the same reaction. Common salt is occasionally, though rarely used for adulterating guano, and it can generally be observed in grains throughout its mass, and the taste of the particles picked out of it is, on the whole, the most convenient mode of determining its nature. It appears, then, that provided a guano be of a kind distinguished by general uniformity of composition, it is possible to test its purity with some degree of accuracy, but this occurs only with Peruvian; and, though a few experiments can be made, by means of which the grosser impurities of the other sorts of guano may be detected, it is necessary to bear in mind that in the latter case these substances may be naturally present, and hence the farmer will not rashly bring a charge of adulteration against the seller, although he may with justice complain of the inferiority of the article. As far as my experience goes, Peruvian guano is the only variety which is deliberately adulterated; and it is selected because it is more commonly bought without analysis than any other variety, and because the inferior guanos are often so low in quality that they will not bear further deterioration. With the inferior guanos I believe there is no safety except in complete analysis, because the question generally is, not whether they are adulterated, but whether the farmer gets fair value for his money. All the difficulties which occur in testing guano are met with to a still greater extent in superphosphates, where we have to look not merely for ammonia and phosphates in their ordinary condition, but also in the form of soluble phosphates, and then mixed with a variety of other substances in the most variable proportions. Their complexity is, indeed, so great, that no kind of testing can be considered satisfactory; nor is it even possible to judge by external appearance, for the differences between genuine and good samples are very great indeed. We may judge to some extent of the quantity of moisture by pressing the substance in the hands, or, better still, by beating it in a mortar, when it sometimes goes into a pasty mass; but even this is not a proof of inferiority, for some very good superphosphates are extremely damp. In short, so great are the variations that nothing but an exact determination of the quantities of soluble and insoluble phosphates will give any reliable information. Nor is it possible to give rules by which inferiority can be detected, and the farmer is forced to come to the chemist, and he places in his hands what is one of the most difficult and tedious anslyses in the whole range of chemistry. To the various other substances used as manures, such as coprolites, bone ash, flesh manure, and a host of others, no tests can be applied by means of which their quality can be ascertained, and it is absolutely necessary to determine the exact proportions of each of their valuable constituents; but as these substances are comparatively seldom used by the farmer, it is of less importance for him to do so. From what has been said the obvious inference is that the great bar to the testing of most manures is their extreme complexity. Whenever they are simple in composition, as is the case with the salts of ammonia or nitrate of soda, methods of examination can be made use of, which are very easily executed; but just in proportion to the number of different manurial substances present does the difficulty of testing increase. If we add to this also the fact that a large proportion of all the more complex manures consist of substances which yield little or no value to the farmer, but which he is compelled to take because they exist in the natural mixtures employed as fertilizers, he will readily appreciate the necessity for a more elaborate and complete examination than it is possible for him to make. And for this reason, also, the complex manures are those most frequently adulterated; for the dishonest dealer, when detected, has always the opportunity of falling back upon the admitted variations in their composition, and declaring that the substances detected by analysis are those naturally existing in the manures. Along with these, a complex manure has another disadvantage, in so far as the purchaser is compelled to take a mixture which may not be that best suited to the soil or crop to which it is to be applied. It must be admitted, no doubt, that a manure ought to contain all the different constituents of a crop which is to be raised by means of it; but in actual practice a soil may be deficient in one substance, which alone requires to be added. It is true that those not immediately required may become available to future crops; but in the meantime they are liable to a greater or less loss in the soil, and would be much more economically applied if they could be reserved till the time at which they are wanted. The perfection of manuring would be arrived at, if each individual constituent of the food of plants could be purchased separately, so as to place the farmer in the same position with them as he is with seeds; but just as the individual who is about to lay down land in grass does not purchase for this purpose a miscellaneous jumble of grass seeds, but selects only the species he knows from experience to be most advantageous, and mixes them in proper portions, so he would choose such quantities of each manurial substance as experience teaches him to be best adapted for his soil. Although this would, no doubt, be the most advantageous way of employing manures, I must by no means be supposed to assert that we are at present possessed of sufficient knowledge to enable us to make the most suitable mixtures; but the cause of our ignorance on this point lies in the complexity of our present manures, which prevents our having the opportunity of making our experiments upon each individual constituent, or upon definite mixtures; and I have no hesitation in saying, that if at the present moment the important components of manures were to become separate articles of commerce at such prices as would permit their use by the farmer, the next ten years would show a very important addition to our knowledge of both the principles and practice of manuring. It is scarcely necessary to observe that there is no prospect of such a change occurring, but it should, in the meantime, indicate the direction in which the improvement of manures ought to be carried.

And it is the more important for me to direct attention to this point, because there appears to be a growing tendency towards the complication of manures, as it is becoming customary to mix superphosphates with kelp, potash, salts, and many other substances—a system which I think the farmer would do well to discourage. It is infinitely preferable for him to purchase these substances separately and make the mixture for himself, or to use the superphosphate, provided he has found, after a few trials, as he frequently will do, that the kelp is comparatively of little use. And this course must be equally advantageous to the manufacturer, who of course will derive the same benefit from the sale of these substances separately as he can from their mixture. I have thus endeavoured, as far as practicable, to make intelligible to you the best means by which a farmer can form for himself some opinion of the genuineness of his manures. I have only to point out once more that in most cases he can only arrive at probable conclusions, although they will be most commonly sufficient to wake his suspicions when anything is wrong. I should commit a great error did I lead you to suppose that they enable you to judge of the value of the manure examined. That can only be done by an accurate analysis, which requires considerable chemical knowledge and skill. At present it is an exceptional case when a farmer is a chemist; but I see no good reason why it should be so; and I trust that the system of agricultural education which has just been inaugurated by the Highland Society may enable the next generation of farmers to do a great deal more for their own protection.

The lecture closed with a vote of thanks to Professor Anderson and the Chairman.

THE NORTH LINCOLNSHIRE AGRICULTURAL SOCIETY.

MEETING AT LOUTH.

There were some three or four likely gatherings during the week, bringing many of our agriculturists together again—at the Peterborough junction. On the Wednesday, for instance, Mr. Sanday had his annual ram letting, when it appeared that all the best sheep had by no means been sent to Salisbury. On the Thursday followed this North Lincolnshire Show; and on Friday there was a sale of some very good hunting stock in the immediate neighbourhood of Louth, or some plate racing at Boston, as the visitor's route or tastes might direct him. All these were well within the range of our North country friends, while many travelled from far greater distances to bid, buy, or to look on.

The North Lincolnshire Society—which by this time might as well be *the* Lincolnshire—came quite up to the standard of this year's meetings. That is to say, it was one of the best exhibitions of stock and implements ever known in the county. In many respects it was decidedly superior to any former occasion, and in some altogether unequalled. We may cite, in support of this, the entry of horses, which far exceeded anything that ever North Lincolnshire has been able to do in this way. The horse classes were, indeed, the great feature of the day. They numbered in all somewhere about two hundred, and ran through every kind and variety a farmer would be justified in turning his attention to. There were cart stallions, draught mares, pairs of working plough horses, foals, yearlings, two-year-olds, hunting mares and foals, three and four year old hunting geldings, heavy and light weight carrying hacks, hack stallions, and hunter stallions. Every one of these had its own class and premium, and there was scarcely one but was well filled. We honestly confess to having ourselves some little leaning towards a good-looking horse, while the Lincolnshire men in no way disguise their partiality. The large hurdled-off ring, or paddock, in which the judges of horses performed their duties, was the centre of attraction during the whole morning. In a very good, spacious show-ground, it was the only place, despite an unusually large attendance, that you were at all hustled or crowded in the endeavour to see what was going on. This is surely suggestive of what we should continue to do in this wise. And the more especially when we come to remember the character of such a company. It was eminently agricultural. We should think there was hardly a man who paid his shilling but that felt some direct interest in the objects of the meeting; and still they turned to, and thronged round the horse classes.

Generally, too, these were well worth looking at. At this moment, perhaps, the Lincolnshire cart horse is about the first favourite of all the sorts we use for heavy draught work. And this is a distinction far from unmerited. He has great power, good symmetry, commonly with famous shoulders, rare quarters, and a good middle-piece between them. He has, moreover, a peculiarly lively and cheerful look, and, above all, as a rule, has the crowning point in any horse-list of points—capital action. The prize here went to a three-year-old, who beat, amongst others, a rather famous horse from Peterborough, called "England's Glory," who showed to great advantage at Salisbury. The latter, who is just double the age of Mr. Skinner's colt, is certainly a very grand, first-class style of horse, and his victory was counted on with some confidence. The shout, indeed, of the man who led the other one, when the judges gave him the ribands, proved how much he thought of beating such a clipper. There were three or four more promising stallions in this lot, but chiefly young ones that will grow better as they grow older. It is surely a mistake to use or travel a two-year-old, though we saw three of this age shown as cart stallions.

There was a very good class of cart mares, with some equally creditable young stock, and half-a-dozen "pairs" of draught horses in work, any two of which were well worthy of a premium. They offered a capital illustration of what an agricultural team horse should be. As a man said, putting his hand on the withers of one of these, when they were talking over the merits and possibilities of Mr. Boydell's engine, "this is the steam plough I shall stick to, till I see something a good deal better than I have yet."

Terrible as it may sound to some of our readers, these Lincolnshire farmers look up the hacks and hunters with even more gusto than they do horses "suited for agricultural purposes." Of course, the country gentlemen encourage them in this sad habit, and many was the discussion in the Louth show-yard over the shoulders of a Fernhill horse, or the stock of so carty a quartered thoroughbred as Martext. It is only fair to say that the colts by this horse —and there were many of them in the catalogue—have generally far more style about them than their sire. In truth, for such a district, the entry of thoroughbred horses to get hunters rather disappointed us. They were but a coarse lot, with little stamp or repute about them, either in appearance or performance. Two or three were evidently not thoroughbred, and to one of these, a steeple-chase horse called "The Wild Hero,', the judges gave the premium. The award, however was at once objected to, on the ground, we believe, that The Hero is a roarer! The horse which stood next to him was Cameleopard—perhaps, for the purpose, altogether the best of his entry, despite an ugly-looking sand-crack. There was nothing, however, terribly high-bred; and considering the judges are instructed to take "pedigree into consideration," there should certainly be a proviso that the stallion to get hunters should have a pure pedigree. Surely such a sporting race as the farmers of Lincolnshire will not try to "raise" their hunters from a half-bred sire.

The hunting stock nearly all appeared to be better bred; and there was a four-year-old filly by Bay Middleton in the twelve-stone hack class, that was wonderfully attractive. If not fit for a hack exactly, she looked worth three times as much as the rather vulgar nag—with *very good action* though—that took the prize. A hack to carry eighteen stone is about an ultimatum to make a show from, and there was scarcely one of the dozen sent for this section that looked up to the weight.

We have been compelled to make this horse show what it really was—the most important feature of the meeting. The cattle classes, which do not extend beyond Shorthorns, were still also on the improvement. If not numerically in such force as they have been, the entry of both aged and young bulls was thought to be the best the Society has ever yet brought together. Mr. Maiden's first-prize bull Lorraine, by the third Duke of York, is a magnificent animal of rare quality, and with the good points of a Shorthorn. very favourably developed. The names of such men as Messrs. Torr, Smith of Rasen, Dudding, Cartwright, Marfleet, Bartholomew, and Hutton, will tell at once the high character of the stock to be found here. In the cow classes, which were not generally equal to the male animals, one of the most interesting trials is still for four cows—none of which are to be entered in other class—the property of the same person. There were four lots sent into the ring, all in good evidence of the herds they came from, but with Mr. Torr's again as the best. One gets a chance, under such circumstances as these, of seeing an animal in her true form—a very different thing from what she often is when dressed up for "party purposes."

Mr. Torr, in almost the only practical speech of the day, complained directly of the short show of sheep, which he characterized as the weak place of the meeting. For our own part we should be inclined to divide this honour with the pig classes. These were by no means up to the mark of what we have been accustomed to see lately. They were, indeed, but a ragged lot of all sorts; while some of the long-woolled sheep showed very well—Mr. Clarke's rams, for instance, and a few good pens of ewes. There may have been better; but still, there was nothing to complain of. In some respects, the Lincolnshire may be considered only a local gathering, and only to be so tested. In others, as we have already intimated, it has far higher claims and merits.

The poultry show was the shortest we ever saw—a matter of no great consequence. The implement entry, on the other hand, was the largest that the Society, in its twenty years' travelling to and fro, has been able to boast of—a matter of far more import. The committee continue to offer premiums for all kinds of machinery; and the manufacturers still continue to compete for them. It will be found that such firms as Bentall's, from Maldon, and Smith and Ashby, from Stamford, shared these distinctions with some of the local makers. Dray, and Burgess and Key, had each one of their reapers on the ground; while there was a steam-engine or two at work, and Boydell's traction machine occasionally traversing the yard, to the mortal dread of the hunting stock; while the cart-horses, on the contrary, appeared to treat its snorting and threatening with complacent contempt.

This machine was in trial during the week on the farm of Mr. Robson, near Louth. Its merits were much canvassed on the show-ground, and more than any other practical point at the dinner. The general feeling seemed to be, that while every allowance and encouragement should be made, there was little notion, from what had been seen, of steam-ploughing yet coming into fashion in Lincolnshire. The dinner itself was commendable not only for the manner in which it was supported by the agriculturists themselves, but especially by the country gentlemen. We know no meeting where the two classes pull so well together as they do in Lincolnshire. The toast list would scarcely suit our columns. It was three hours and a half good, from the time we sat down, before we arrived at the toast of the evening—"Success to the Society;" while "The judges," "The successful candidates," and so on, came as usual at the fag end of the feast, when people begin to feel they have had pretty well enough of it. Mr. Alington, in the absence of Lord Yarborough, made a very good president, and nearly every one of the speakers who followed him went well to the point of what he had to say. The chief mistake of these meetings is that they keep agriculture a little too much at arm's length.

PRIZES FOR LIVE STOCK.

JUDGES.—W. Brooks, Fornaby.
J. Painter, Burley, Rutland.
C. Stokes, Kingston, Kegworth.

SHORTHORNS.

CLASS 1.—Bulls, above one year old.

First prize of £20 to Messrs. E. and C. Marfleet, Bassingham (Baronet).

Commended.—Messrs. Dudding and Thorpe's bull.

CLASS 2.—Bulls, three years old and upwards.

First prize of £6 to Mr. T. C. Maidens, of Brink Hill (Lorraine).

Second prize of £3 to Messrs. Dudding and Thorpe (Superior).

CLASS 3.—Bulls, two years old.

First prize of £6 to Mr. W. Bett, of Willingham (Knightley).

Second prize of £3 to Mr. Larder, of Cockerington (Hero).

CLASS 4.—Yearling Bulls.

First prize of £6 to Mr. N. Cartwright, of Haugham (Ringleader).

Second prize of £3 to Mr. Dudding, of Panton (Lord of the Manor).

CLASS 5.—Bull Calves.

First prize of £3 10s. to Mr. R. Dudding (Admiral).

Second prize of £1 10s. to Mr. W. Smith, of West Rasen (Albert).

CLASS 6.—Cows, more than four years old, having produced a calf within the preceding nine months.

First prize of £7 to Mr. W. Torr, of Aylesby (Flower).

Second prize of £3 to Mr. S. R. Kemp, of Elkington (White).

CLASS 7.—Heifers, three years old, having produced a calf at its natural time.

First prize of £5 to Mr. W. Bartholomew, Goltho (Roan).

Second prize of £3 to Mr. W. Torr (Glittering Star).

CLASS 8.—Heifers, two years old.

First prize of £5, and second prize of £3, to Mr. G. F. Heneage, M.P., Hainton Hall.

CLASS 9.—Yearling Heifers.

First prize of £5, and second prize of £3, to Mr. W. Torr.

CLASS 10.—Heifer Calves.

First prize of £3 to Mr. W. Smith, of West Rasen.

Second prize of £1 to Mr. W. Torr.

CLASS 57.—Four breeding cows, the property of one person or partners, not entered in any other class.

Prize of £5, given by J. B. Stanhope, Esq., M.P., to Mr. W. Torr.

CLASS 58.—Pair of Steers, above two and under three years old.

Prize of £5 to Mr. W. Mason, Northolme.

SHEEP.

JUDGES.—L. Borman, Grimsby.
J. Painter, Burley.
C. Swain, Wrangle.

CLASS 11.—Ram, of any age.

Prize of £10 to Mr. R. W. Holmes, of Fiskerton.

CLASS 12.—Shearling Rams.

First prize of £7, second prize of £4, and third prize of £2, to Mr. C. Clarke, of Scopwicke.

CLASS 13.—Two-shear Rams.

First prize of £5 to Mr. C. Clarke.

Second prize of £3 to Mr. W. Abraham, of Barnetby-le-Wold.

CLASS 14.—Aged Rams.

First prize of £5, and second prize of £3, to Mr. R. Lynn, of Stroxton.

CLASS 15.—Pens of ten Ewes, having suckled lambs to the 10th of July.

First prize of £6 to Captain Grantham, of Sturton.

Second prize of £3 to Mr. R. W. Holmes.

Commended.—Mr. H. J. Seel's ewes.

CLASS 16.—Pens of Shearling Gimmers.

First prize of £5 to Mr. W. Abraham.

Second prize of £3 to Captain Grantham.

CLASS 17.—Pens of ten Ewe-lambs.

First prize of £4 to Mr. H. Grantham, of Sturton.

Second prize of £2 to Mr. J. Drury, of Saxilby.

HORSES.

JUDGES.—R. Chapman, Cheltenham.
G. Garfit, Knutsford.
W. Squier, Sowerby.

CLASS 18.—Stallion for Hunters.

The prize of £10 to Mr. W. Bartholomew (Wild Hero). A protest was entered against this award.

CLASS 19.—Stallion for Draught Horses.

The prize of £10 to Mr. J. Skinner, of Thorney (King of the County).

CLASS 20.—Stallion for Roadsters.

The prize of £7 to Mr. J. Watkin Epworth, Newland (Pride of the Isle).

CLASS 21.—Mares for breeding Hunters with Foal at heels, or having been put to the Horse this season.

First prize of £7 to Mr. W. Abraham.

Second prize of £3 to Mr. J. W. Flower, of Martin.

CLASS 22.—Mares for breeding Draught Horses.

First prize of £7 to Mr. B. Abbott, of Alford.

Second prize of £3 to Mr. G. Bell, of Mablethorpe.

CLASS 23.—Mares for breeding Roadsters.

The prize of £5 to Mr. W. H. Collingwood, of Six Hills.

CLASS 24.—Two-year-old Hunting Filly.

The prize of £3 to Mr. T. Lyall, of Gayton-le-Wold.

CLASS 25.—One-year-old Hunting Filly.

The prize of £5 to Mr. W. J. Nicholson, of Grimblethorpe.

CLASS 26.—Two-year-old Cart Filly.

The prize of £5 to Mr. Watson, of Harmston, Canwick.

CLASS 27.—Yearling Cart Filly.

The prize of £3 to Mr. E. Walesby, of Maltby-le-Marsh.

CLASS 28.—Cart Foal.

The prize of £2 to Mr. R. Chatterton, of Minting.

CLASS 52.—Three-year-old Hunting Gelding or Filly by a Thorough-bred Horse.

A whip of the value of £5, given by the President, the Earl of Yarborough, to Mr G. Walker, Bigby, for bay gelding by Fernhill.

CLASS 53.—Hunting Gelding or Filly, four years old, by a Thorough-bred Horse.

A whip of the value of £5, given by Sir M. I. Cholmeley, Bart., M.P., to Mr. J. G. Calthorpe, Louth, for brown filly by Brown Middleton.

CLASS 54.—Gelding or Mare calculated to carry 18 stone as a Hack, and not exceeding 15 hands high.

A silver cup value £5, given by Sir E. Brackenbury, Bart., to Mr. M. Marshall, Hemingby.

CLASS 55.—Gelding or Mare, not exceeding 7 years old, to carry 12 stone as a Hack.

Prize of £5, given by the Rev. F. Pretyman, to Mr. G. B. Skelton, Hibaldstone.

CLASS 56.—Hunting Foal by a Thorough-bred Horse.

Prize of £5, given by G. F. Heneage, M.P., to Mr. T. Brooks, Croxby, for foal by Martext.

CLASS 59.—Pair of Draught Horses, Mares and Geldings only.

Prize of £5, to Mr. H. Freshney, sen., South Summercotes.

CLASS 60.—Foal by "Martext."

A silver cup value £5, given by Mr. Thomas Grantham, to Mr. T. Brooks, Croxby.

PIGS.

JUDGES.—L. Borman, Grimsby.
J. Painter, Burley.
C. Swain, Wrangle.

CLASS 29.—Boars of Large Breed.

First prize of £4 to Mr. J. Coulam, Calcethorpe (white).

Second prize of £2 to Mr. T. M. Richardson, Hibelstow (white).

CLASS 30.—Boars of Small Breed.

First prize of £4 to Mr. George Burwell, Thonock (white)

Second prize of £2 to Mr. W. Hutton, Gateburton (black and white).

Commended.—Mr. Henry Young's white boar.

CLASS 31.—Sows of Large Breed, having had a Litter since the 1st of March.

First prize of £4 to Mr. T. Upton, Raithby.

Second prize of £2 to Mr. D. Baldock, Louth (white).

CLASS 32.—Sow of Small Breed, having had a Litter since the 1st of March.

Second prize (only) of £2 to Mr. W. Allatt, Glinton (white)

CLASS 33.—Three Breeding Pigs of a Large Breed.

Prize of £3 to Mr. T. M. Richardson (white).

CLASS 34.—Three Breeding Pigs of a Small Breed.

Prize of £3 to Mr. R. E. Duckering, Northorpe.

CLASS 61.—Store Pigs, the property of Cottagers.

First prize of £3 to J. Johnson, Willingham.

Second prize of £2 to G. Firth, Lambcroft.

Both these prizes were presented by Mr. C. E. Amos, C.E.

EXTRA LIVE STOCK.

Mr. R. Sharpley, of Great Carlton, 10s. for a roan bull.

Mr. C. Starmer, of Hogsthorpe, 10s. for a roan heifer, and £1 for a red heifer.

Mr. H. Grantham, Sturton, 10s. for a fat ewe.

Rev. T. Livesey, of Stourton Hall, 10s. for a pen of three Southdown wethers.

Mr. C. Ingoldby, of Louth, £1 for a chesnut colt.

Mr. T. Weightman, of Burwell, £2 for a bay coaching gelding.

Rev. T. Livesey, of Stourton Hall, 10s. for a black sow with white spots.

Mr. D. Baldock, of Louth, 10s. for a litter of eight pigs.

PRIZES FOR IMPLEMENTS.

JUDGES.—D. MARTIN, Wainfleet,
T. JOHNSON, Wakefield,
T. OUTHWAITE, Catterick.

For the best pipe or tile machine—£10, to Mr. Wm. Watkinson, Louth.

For the best portable thrashing machine—£10, divided between Mr. Wm. Foster, Lincoln, and Messrs. Robey and Co., Lincoln.

For the best plough for light land—£3, to Mr. Thos. Ashley, Louth; and £1, to Mr. John Brown, South Owersby.

For the best plough for heavy land—£3, to Mr. Thos. Dawson, Goulceby; and £1, to Mr. Chas. Grantham, jun., Fulstow.

For subsoil plough—£2, to Mr. E. H. Bentall, Heybridge, Essex.

For the best drag or cultivator—£3 to Mr. Thos. Walker, Wootton; and £1, to Mr. Selby Hand, Glinton.

For the best scarifier—£3, to Mr. E. H. Bentall; and £1, to Mr. Selby Hand.

For the best drill for general purposes—£5, to Mr. Jas. Coultas, jun., Grantham; and £2, to Mr. Wm. Watkinson.

For the best ridge drill—£2, to Mr. Geo. Hunter, Ulceby; and £1, to Mr. Jas. Coultas, jun.

For the best liquid-manure drill—£2, to Messrs. R. and J. Reeves, Bratton, Wiltshire; and £1, to Mr. Wm. Watkinson.

For the best horse-hoe—£2, to Mr. Isaac Spight, Brigg; and £1, to Messrs. Grant and Wright, Binbrook.

For the best horse-hoe for turnips—£1, to Messrs. E. and H. Bentall.

For the best grubber—£2, to Mr. Wm. Torr, Aylesby; and £1, to Mr. Jas. Robinson, Rothwell.

For the best set of harrows for heavy land—£2, to Mr. Thos. Walker, Wootton; and £1, to Mr. E. H. Bentall.

For the best set of harrows for light land—£2, to Mr. Bentall; and £1, to Mr. Thos. Walker.

For the best waggon for general purposes—£3, to Mr. W, Torr; and £1, to Messrs. Hayes and Son, Stamford.

For the best two-horse cart—£2, to Messrs. Hayes.

For the best one-horse cart—£2, to Mr. W. Gresham, Ulceby.

For the best clod-crusher—£2, to Mr. W. Watkinson.

For the best roller for general purposes—£2, to Mr. Watkinson.

For the best dressing machine—£3, to Mr. Cartwright, Louth; and £1, to Mr. C. Revill, Lincoln.

For the best corn blower—£2, to Mr. John Holloway, Louth.

For the best chaff-cutter—£3, to Messrs. Smith and Ashby, Stamford; and £1 for second best.

For the best turnip-cutter—£2, to Mr. Salah Cartwright, Louth.

For the best cake-breaker—£1, to Mr. E. H. Bentall, Essex.

For the best mill for crushing agricultural produce—£2, to Mr. Selby Hand.

For the best steaming apparatus—£2, to Mr. Thomas Simson, Lincoln.

IMPLEMENTS NOT ENUMERATED.

For saddlery—10s., to Mr. John Barton, Louth.

For swathe rakes—5s., to Mr. John Carratt, Louth.

For a corn-screen, 10s.; for steam pans, £1; and for filter, £1—to Mr. Salah Cartwright, Louth.

For four horse shoes—2s. 6d., to Mr. C. Coulbeck, Louth.

For a reaper, £2; and for a chain harrow, 10s.—to Mr. John Iles, Binbrook

For a reaping machine—£3, to Mr. Jesse Kemp, Thurlby Grange.

For a machine for weighing sheep alive, £1; and for garden utensils, £1—to Mr. Robert Mason, Louth.

For coal-gas apparatus—£1, to Mr. J. B. Porter, Lincoln.

For saddlery—10s., to Mr. Edw. Sandall.

For haymaking machine, £1; for horse works, £1; and for horse-rake, 10s.—to Messrs. Smith and Ashby, Stamford.

For pair of Derbyshire millstones—£1, to Mr. Tye, Lincoln.

For portable-gas apparatus—£1, to the Rev. A. Veitch, Tetney.

For American floating-ball washing machine—10s., to Mr. W. Watkinson.

For steam-cooking kitchen-grate—10s., to Mr. C. Wilkinson, Louth.

MR. SMITH'S MODE OF APPLYING STEAM-POWER TO CULTIVATION.

(FROM A CORRESPONDENT.)

A second exhibition of Mr. Smith's mode of applying steam to the cultivation of the land came off on Tuesday at Woolston, in the presence of a large assemblage of farmers and others interested in the subject. There were upwards of thirteen hundred people collected to witness the performance. This large attendance of farmers to the mere summons of an energetic mind, which conceives that it has hit upon the true solution of the problem of the appliance of steam-power to the cultivation of the soil, clearly denotes the deep interest which that subject has attained to.

There is nothing new in the present appliances of steam, as compared to what was practically working last year. On the contrary, the question seems rather to be at a standstill, for neither Mr. Smith, Mr. Boydell, Mr. Fowler, Mr. Williams, nor Mr. Collinson Hall have done anything beyond their preceding operations—if we except here and there an economical adaptation or so, which may have simplified but has by no means enlarged the working capacity of their several schemes.

Mr. Smith works precisely upon the same plan as heretofore; engine, windlass, snatch, blocks, rope, &c., &c., varying scarcely in the slightest degree. The engine is a seven-horse portable one; the windlass, with the slightest possible change, is composed of two drums, which are put in and out of gear at will by the man who attends it; the rope, we believe, comprises the same number of strands, is about 24 chains in length, and 1¾ inch in circumference; there are four turn-tables to keep the rope steady to its work, each of which requires a man to attend it, and the alleged cost of the whole plant is precisely the same as given in last year's statement.

Mr. Smith was stoutly and closely questioned as to the details of this statement, to which he replied with the utmost confidence, as though he was perfectly convinced of the truthfulness of his conclusions.

The implement (a scuffler) was tried upon a heavy clover-ley, and certainly did its work remarkably well. But as we have no means of testing the cost of the work done, we must content ourselves with leaving the figures as they stand in Mr. Smith's statement, and our readers to judge for themselves.

YORKSHIRE AGRICULTURAL SOCIETY.

MEETING AT YORK.

In the short period of twenty years (since its formation), the Yorkshire Agricultural Society has gathered strength enough to become something like a rival to the Royal Agricultural Society of England in the magnitude and interest of its annual show. And no wonder: for the three Ridings constitute almost a little England; the population of 1,800,000 embracing a great diversity of classes—the manufacturers and mechanics in the great factory towns, mountaineers on the fells and moors, as well as enterprising agriculturists on the wolds, and able farmers and graziers in the vales and rich lowlands. Yorkshire is the very home of every industry, and turns out its steam engines and farm machinery, its clod-crushers and reapers, as well as its unsurpassed shorthorns, its Leicester, long-wool, and hill-country sheep, its magnificent hunters, and strong-stepping cart-horses. Hence we are not surprised to find the provincial Society's celebration well-nigh competing for pre-eminence with that of the national show. Why, at Rotherham last year, nearly £800 of prizes and a number of gold and silver medals were awarded. For implements the prizes equalled £200. At Salisbury they were only £173. There were 700 implements, besides other articles; at Salisbury 880. There were 93 exhibitors of implements; at Salisbury 154. There were 100 shorthorns; at Salisbury, the unprecedentedly large show amounted to only 109. There were 177 horses; at Salisbury only 151. There were 220 entries of poultry; at Salisbury only 156 !

The city of York is well situated and well constituted to insure a successful meeting. In the centre of the county, with five different railways converging to it, and each of these ramifying into innumerable branches and junctions, it is just in the right centre for receiving visitors from every part of all the three Ridings; while the city itself, having 40,000 inhabitants, and abounding with good hotels, is admirably furnished with the means of accommodating a large influx of business-folk and sight-seers.

The North Eastern, the London and North Western, the Great Northern, the Midland, the Manchester Sheffield and Lincolnshire, and the South Yorkshire railway companies, conveyed stock to and from the show free of charge, and implements and poultry at the ordinary rates to the show, and free back. The Lancashire and Yorkshire railway company took stock free away from the meeting; and free transit for live stock was given by the Stockton and Darlington railway: and of course return tickets and cheap trips for passengers have been the order of the day on all the neighbouring lines. And further, as accessory entertainments for holiday-makers, we had a horticultural show, a ball, the theatre, and the museums, public gardens, &c., open; a display of fireworks, and plenty of music and merriment everywhere.

The labours of the judges commenced on Tuesday morning; and the great public feature of the day was the field-trials of the reaping-machines and the steam-plough.

The Yorkshire Agricultural Society, with that spirit of laudable emulation to promote onward progress, offer this year the handsome prize of £30 for the best application of machinery, impelled by steam power, to the cultivation of the soil. The only competitor for this prize was Mr. Jas. Boydell, who brought forward his powerful locomotive, fitted with Boydell's well-known endless railway. The appearance of this surprisingly unique and unnatural-looking carriage, perambulating the streets of the good old city of York, created extraordinary interest, and which continued to increase as the time of trial drew near. It certainly is a monstrous-looking carriage, and it seldom fails to convey an unfavourable impression to the mind of every beholder. The comparisons indulged in, and names given to it, excite a smile: The Antediluvian, The Megatherium, The Great Elephant on Stilts, &c., &c., &c. But, passing these by, we take it as "*Boydell's Locomotive Traction Engine or Steam Horse,*" and view it alone on its own intrinsic merits. It transports itself with great ease and quickness to its required position; and, if need be, can drag a heavy load along with it, even up a steep incline (as we saw it do at Salisbury, an incline of one foot to seven and a-half elevation, dragging with it seven tons weight). It can take the place of a stationary or fixed engine; it can be turned in a comparatively narrow space, being entirely under the control of the steersman; and it is fitted for the draught of either carriages or implements of husbandry and cultivation. Now, taking it in this light, where have we another machine to compare with it? Its power is great, and decidedly of usefu application.

The trial took place upon a farm in the occupation of Mr. Wilberforce, of York, and about five miles from the city (from which special trains ran), and was witnessed by upwards of 3,000 persons, who manifested the deepest interest as to the result. The spirited firm of Richard Coleman and Sons, of Chelmsford, have manufactured a very powerful scarifier (after their well-known pattern), which they have adapted for steam-power: with this implement attached to the machine from the hind beam the trial commenced. The scarifier takes a breadth of 7 ft. 9 in., and is of proportionate weight. The steam-horse walked away, snorting as he went, and without difficulty dragging his immense cultivator, which breakes up the soil at various depths, as required by the judges: now in 10 or 12 inches deep; in the next few yards, by a clever compound-lever lift, not more than two or three inches; again, 5, 6, 7, or 8 inches, as required, and without stopping to adjust the lifting motion. In the soil, which had recently been converted from woodland, were many annoying roots, but these were torn up or run through readily. Once or twice, owing to the broadshare being on, and to the looseness of some portions of the soil, symptoms of clogging appeared, but which were soon relieved by the application of the lever lift. The course was round the field, so as to give every visitor the best opportunity of seeing the work done. After another turn the broadshares were removed and the chisel-points substituted. In the mean time four of Belt's iron ploughs were attached, and proceeded to work. This they did very satisfactorily, and without apparent difficulty; but whilst proceeding steadily and at ease, the crank on the upper part of the engine gave way and broke off: this was a great disappointment to the assembled thousands, as well as to Mr. Boydell and the Messrs. Coleman, &c. Upon examination it proved to be owing to a previous injury done to the crank iron at some distant period, as the bar had been fractured over two-thirds of its diameter: most probably the strain upon the cultivator, when hold of a hidden root, accelerated the disaster; however, sufficient had been effected to enable the judges to give a decided opinion in favour of this wondrous, but not very handsome steam horse, and he was adjudged the prize of £30. Harrows, rollers, clodcrushers, cultivators, &c., &c., were at hand, and would have been tested but for the accidental, and trying misfortune. We hope that ere long such improvements will be effected as to make it an acquisition on every large farm.

Prior to the trial of this tremendous engine, the reapers were tested. There were three: Mr. J. Palmer's Union reaper; Mr. Wray's reaper; and Mr. Busby's, made by Dray and Co. The crop was of wheat, a light one, and in most respects favourable for reaping, nearly all being upright and ripe. It was arranged that each reaper should take three turns round a plot of wheat, the circuit being about 500 yards, previously opened by a scythe. Mr. Palmer commenced. The Union reaper requires the power of two horses: its chief peculiarity is in having a side and back delivery, facilitated by a series of rollers affixed in the delivering frame. It requires two men, one directing the horses the other sits at the back, and with a toothed rake gathers the reaped corn into convenient quantities for tying into sheaf. This, by the side delivery, can be put so far aside as not to impede the machine in its next course, which is a great advantage. The field was not altogether clear of stones, some of which endangered the knives; this led the manager to gear it a little too high at first, and the work consequently showed too much stubble, and there were numerous bits of cut straw strewn about; but this was, immaterial as falling between the rollers not in work, otherwise all was well done; and in the final trial, the cutting was low and evenly cut, averaged about 4½ feet at each cut. The great distinction of side-delivery (though not self-acting) decided the judges here, as elsewhere, in giving their award: they awarded the £15 prize, but withheld the gold medal; thus denoting that there are other reapers in their opinion superior to this.—Price £37.

Mr. Busby's was next tried. It is Dray and Co's. improved Hussey with tipping platform. It takes two men as above—one to the horses, the other with the rake; but in addition to these, it requires a number of binders to clear the way prior to taking another bout. This is all very well for reaping wheat, and in general seasons all right enough; but when hands are scarce, and crops ripe, it can by no means equal those reapers made to work with independent side deliveries, and managed by a driver only. (Lord Kinnaird's machine is said to have cut down last season 247 acres of corn on one farm, having only *one man* in attendance with it.) This machine did its work remarkably well, cleanly cut, and evenly delivered behind by rake, taking about 4 feet 3 inches each cut.—Price £25. This reaper is so well known, and its knives in such high reputation, that further remarks would be superfluous. The deciding point is between *independent side-delivery* and the *gathering into sheaves,* the work to be at once completed.

Mr. Wray's one-horse reaper was next tried. The great distinction here is in having an endless knife passing rapidly across and revolving freely from under the back of the frame; it has also the similar back-delivery of Hussey's machine. It requires two men to work it; and the corn is left in sheaf quantities, which must also be removed before it can take a fresh bout, being just the objection of Busby's. This reaper did its work in a workmanlike manner, but the cutting was not quite equal to the others, and when set very low for close cutting it showed symptoms of clogging. The ingenious arrangement of knives did not in this case show to advantage, not being able very readily to relieve themselves; but take it altogether as a reaping implement worked by one horse, it is a very commendable effort for farm service. The breadth taken averaged about 3 ft. 8 in. Price £30. We might observe that the pace was too quick in all the three trials; no horses could keep it up; and in taking the slowest time (43 yards in 30 seconds) gives nearly three miles per hour: the average pace of the various trials exceeded four miles per hour. In trying all of them at a slow pace, we thought Palmer's and Busby's did best, but then not well; the quicker the pace the cleaner and better the cut, and the whole work generally.

Owing to the unfortunate accident to Boydell's engine the trials of ploughing, rolling, harrowing, and general farm implement working was of course given up; but before leaving the ground horses were procured for the purpose of trying a very ingenious and well-manufactured implement, Hansom's potato-digger, made by Coleman, of Chelmsford, for the purpose of digging or throwing out potatoes from their rows. A ridge was formed by the common plough, in the absence of a potato row, upon which to test it: it was put into gear, and being drawn by two horses, completely threw out the whole row, and of course exposing whatever might have been there—this was a loose ridge. There are some very simple and clever contrivances in this implement: one for adjusting the share to any dip or depth; another for setting the forking-wheel higher or lower; and again a circular rack as a stem to carry the front steerage-wheels, to allow of their locking in any direction, and of being lifted or depressed. Subsequently Mr. Wilberforce kindly offered a row of potatoes in an adjoining field; to this it proceeded, and being put into work, quickly showed the greatest facility in taking up potatoes, the whole row, tops, potatoes, and soil, being all spread upon the surface, and, but for the prevention of a screen, some of the potatoes would have gone inconveniently far away. The whole was cleared to full satisfaction. The arrangement of machinery is simple and good: the cog-wheels are in a box, driving a revolving-wheel armed with forks. The share is attached to the hind parts of the frame by the share-stalk, and passes readily under the rows of potatoes. As they are raised by the share, the revolving forks admirably throw out the tubers for picking. Price £18. The silver medal was awarded to it.

The Show was held in the County-Asylum Field, situated north-west of the city, a short distance through the ancient Bootham Gate, and close to the York and Scarborough railway, so that stock and implements could be unloaded and reloaded by a convenient landing stage on the siding laid down in the yard. Nothing could surpass the excellence of the arrangement and fitting-up of this show-yard. It was walled off from the street, and surrounded by a temporary board fencing. In that part of the meadow nearest the street, devoted to live-stock, were seven long rows of continuous shedding, with boarden roofs, board-partitioned pens (with doors) for sheep and pigs, and very convenient stalls for horses and cattle. Along the east side of the field, under the shade of a row of elms, was a very long shed with a lean-to boarded roof, containing pens with wire-net front for the poultry, and affording also stall-room for some of the horses; the pens for fowls on a shelf, and for geese and ducks on the grass, being a great advance upon the "dish-covers" of last year. Every shed had its water-tap, and near the entrance-gate was a raised inclined platform for convenience in loading. We ought to mention, too, the excellent building erected for refreshment-rooms, and the spacious marquee in which the company might rest themselves. Beyond the lines of sheds we came to the enclosed "Judges' ring," and other enclosures, where the entire horses exhibited their style and action; and then, at the further end of the meadow, the high ridges were occupied by the stands of implements and machinery. Indeed, the whole arrangement was so good that the satisfaction of the thousands of visitors, as well as of the numerous exhibitors, is the highest testimonial to the zeal, consideration, and forethought of the honorary secretary, Mr. Hannam.

On Wednesday the members of the Society were admitted at ten o'clock, by free ticket, the public at twelve o'clock—gentlemen by 2s. 6d. tickets, ladies by 1s. tickets; and a very large number of people, including an unusual assemblage of ladies, visited the yard. On Thursday (the shilling day) a continuous descent of heavy rain unfortunately damped the proceedings; so that there was a smaller number of visitors than would otherwise have flocked to the yard, and the inspection of the stock was very uncomfortable, if not impossible. Let us first refer to the Implement Show. There were 102 exhibitors (9 more than last year), and a total of 995 implements and machines, being an increase of 295 over those at Rotherham. Of steam-engines there were 17, and of combined thrashing-machines 12.

Coulson, of York, showed his well-known mortising-machine; Reeves, of Bratton, their improved Chandler's liquid-manure drill; Cambridge, of Bristol, his 8-horse power portable engine, combined thrashing-machine, and self-cleansing press-wheel roller; Robey and Co., of Lincoln, their eight-horse portable engine and combined thrashing machine; Coultas, of Grantham, his prize turnip and general-purpose drills; Foster, of Lincoln, a seven-horse portable engine and combined thrashing machine; Lambert, of York, a large assortment of first-class implements; Bentall, of Maldon, his unsurpassed and most valuable broad-sharing and subsoiling implements, arranged in many forms for different purposes; Hornsby and Sons, of Grantham, their portable engines and combined thrashing machines, fitted with their recently patented corn-crusher, and driven with a belt of buffalo-hide, also their celebrated drills for every purpose. Humphries, of Pershore, their first-class combined thrashing machines; Tuxford and Sons, of Boston, their portable engine, with durable flue and tube-boiler and upright cylinder and working parts under cover, and their combined thrashing machine with finishing dressing apparatus and effective table-shaker; Clayton and Shuttleworth, of Lincoln, their noted portable and fixed steam-engines and combined thrashing machines, one of the portable engines fitted with re-reversing motion; Slater, of Hull, a "glass-slipper plough," with mould-board and sole-plate made of thick glass, so as to prevent the adhesion of sticky soil (but which, we suppose, would be scratched to pieces among flints, and ground rough by moist sand); Sawney, of Beverley, his admirable corn-dressing and combined weighing machine and sack-lifter; Smith, of Kettering, his cheap steerage horse-hoe, now made with a swing-bar, so as to accommodate itself to unlevel ground; Naylor, of Brigg, a horse-hoe, with the hoe-coulters hinged upon a semi-circular rack, and having pinions by which they can be separately and instantly set to any width of rows; Turner and Co., of Ipswich, their well-known roller-mills and crushers; Barker, of Dunnington, a great number of ploughs, harrows, drills, and other implements; Lyon and Son, of London, mincing and pulping machines; Coleman, of Chelmsford, his patent cultivators and scarifiers, and expanding harrows; Watkinson, of Louth, improved liquid-manure drill; Banks, of York, carts, and pole-waggon used in the East Riding; Cowham, of Hull, a pulverizing implement, consisting of large revolving rowels with intermediate fixed tines; Patterson, of Beverley, clod-crusher, and compound-action mills; Harland, of Osbaldwick, one-horse carts; Dove, of York, a very large assortment indeed of almost all our first-class agricultural implements and machines; Morton, of Leeds, gates, fencing, &c.; Busby, of Newton, ploughs, carts, waggons, horse-hoes, and chaff-cutters; Walker, of York, most excellent grates and ranges; Smith and Ashby, of Stamford, prize hay-making machines, steel-tooth horse-rakes, safety chaff-cutters, cake-mill, and a beautifully neat, compact, simple, and cheap two-horse power portable steam-engine; Palmer, of Stockton, Garrett's drills and horse-hoe; Weighell, of Pickering, horse-power thrashing machine and Samuelson's combined food-preparer, which cuts chaff and pulps roots at the same time.

For the special prizes offered by Lord Greenock, the President of the Society, for agricultural seeds and collections of agricultural plants, there were seven competitors. Hutchinson, of Sowerby, had a variety of roots, dried specimens, and seed samples. Barratt, of Wakefield, had a collection of 407 growing plants of natural and artificial grasses, and samples of the seeds of each. Major Quenton's admirable specimens from Waterford attracted considerable attention; and Wailes, of Husthwaite, had a good stall of cabbage, mangold, carrot, and other roots, including the curious kohl-rabi.

Some very fine specimens of green flax were shown. And for the wool prizes there were eight entries of long, and four of short wool; some fleeces of great weight, and some of remarkably fine quality.

In reviewing the live stock exhibited, we must observe that the Yorkshire Society, having fewer breeds to deal with than the Royal Society, is able to adopt a greater extent of classification and subdivision of the classes. Thus, in the shorthorns, which form one main feature in the show, in addition to the classes for bulls and yearling bulls, we have bull-calves "upwards of five months old"; we have "Cows of any age" and "Three-year-old cows"; we have "Two-year-old heifers" as well as yearlings, and we have "Heifer-calves." Again, as breeders *will* show overfed animals, the Society solves the difficulty felt by some others, and relieves the minds of the judges, not by fixing a maximum girth and weight beyond which animals shall be disqualified, but by just providing special classes for "Fat oxen" and "Fat cows," where beasts may distend themselves at pleasure. Then, in the "Cattle of any breed," this Society take a march in advance by recognizing the requirements of the dairy-farmer, and giving prizes "for the best cow for dairy purposes," stipulating that the judges shall not take into consideration either the symmetry of the animals or their value to the butcher; but solely their adaptation to dairying. We miss the handsome Herefords and comely Devons, which do not pertain to the county, and have instead an almost unequalled exhibition of favourite Shorthorns.

The entries of cattle were 117; 97 of them Shorthorns, 10 dairy cows, and 10 extra stock.

We consider the Shorthorns made a finer show even than that of Rotherham last year—so good, indeed, that it is difficult to say which was the best class. The bulls "of any age" and the yearling bulls were both good classes; so were the bull calves. The cow class comprised some splendid animals, but also some rather plain. The "Yearling heifers" and "Heifer calves" pleased us, as well as any. The "Fat cows" also were extremely good, considerably better than the class of fat oxen. Lord Feversham's bull in class 1 is of immense size, but we thought rather deficient in the forequarter to have taken the first prize. Mr. Fawkes' prize yearling bull is a very handsome, with a good chine, back, and chest. Sir C. Tempest's second prize yearling bull is a very good one. Mr. Wetherell's highly commended, of great length and fine quality. In the class of bull calves, Mr. Marjoribanks's Great Mogul, which gained the head prize at Salisbury, comes second to Mr. Booth's red calf, which was beaten at that meeting: considerable discussion has been raised upon the judges' award in this case; we are nevertheless of opinion that Mr. Booth's calf, though a very fine animal, is inferior in quality to the other, which is remarkably handsome, symmetrical, and good. Col. Towneley's "Roan Duchess," the first prize "Cow in calf or milk," is one of the most wonderful animals we have seen. She gained the first prize at Lincoln as a yearling, the first prize at Carlisle, the first prize at Dublin in the same year, together with the gold medal as the best female, and the challenge cup as the best in the Show (beating her half-brother Master Butterfly), the first prize at Chelmsford, and the first at Rotherham: her back, hips, shoulders and chest are extraordinary, her quality beautifully fine; but she is very fat, though she has had two calves and is now in milk. Mr. Booth, Lord Feversham, and Mr. Yorke had some very meritorious yearling heifers; but Col. Towneley's first prize yearling has never been beaten—she took also the first prize at Salisbury, and further at Rotherham as a calf. Mr. Booth's heifer calf is a real beauty; Mr. Emmerson's also, and those of Sir C. K. Tempest and Col. Towneley are beyond all praise. Mr. Robinson's fat ox is of great size and depth, and uncommonly well ribbed-up. Mr. Fletcher's fat cow is of splendid quality. Mr. Wiley's (calved in 1849) is a very fine old cow; her loin, rump, back, and forequarters extraordinary; her head beautiful, but she is very fat. Col. Towneley's first prize roan cow is very handsome: she took the first prize at Chelmsford, first at Rotherham, and first at Salisbury. In the extra Stock class Mr. Wiley's extremely beautiful heifer was the chief attraction.

Of 123 entries of sheep, 97 were Leicesters or longwools—the principal sheep of the county; and being classed together there is no necessity to attempt a distinction, sometimes rather fine, between the breeds, as a separate Leicester class ought properly to consist of pure-bred animals only, and not of sheep from flocks which might just as well compete as long-wools. In addition to "shearling rams," "older rams," and "pens of ewes," we have "shearling wethers," and "shearling gimmers." The Cotswolds having come up rather strongly at Rotherham, we have this year a separate class for them. The South and West Downs are comparatively few. The Leicester and long-woolled shearling rams were a particularly good class. Mr. Abraham's are what we could wish from his well-known flock; Mr. Burton's second-prize shearling is beautiful, and that of Mr. Walmsley very handsome indeed, having an exceedingly good back, and fine head and quality. The class of older rams was better still; and we would name as especially commendable the rams of Mr. T. Hannam, one of Mr. Leake's of Market Weighton, and Mr. Wiley's prize sheep. Both the prize pens of ewes are beauties, the first prize-ewes having the best flesh, and the others being too old, namely five-shear. The shearling wethers were good. Among the Downs Mr. Marris' three-shear ram, bred by Mr. Webb, and Lord Wenlock's five shearling gimmers, are particularly excellent. Mr. T. B. Browne's two-shear Cotswold is of extraordinary dimensions, and a remarkably handsome and valuable sheep. In the Extra Stock class we saw some animals that were not very creditable; but taken altogether the show of sheep was considerably better than we have before seen it.

There is a greater number of pig classes than at our Royal Society's shows—namely, one for sows in pig or milk, not qualified to compete in the large or small breed classes; one also for boars not qualified to compete as of large or small breed. Then there is a distinction as to age, and a competition between different breeds, namely a class for "Three store pigs of any breed from 4 to 9 months old," for "Large-breed boars under 12 months old," for large-breed sows ditto; for small-breed boars ditto, and for small-breed sows ditto; and also another class for "Extra stock." There were no less than 100 entries of pigs; and the character of the show was extraordinarily good. The large-breed boars were, if possible, more enormous than ever; the large-breed sows uncommonly good, particularly the prize sow of Mr. J. Tulley, which is of deep as well as long and broad proportions, and fine in her quality. Mr. Mangles has justly taken a high position in the small-breed classes, his prize sow being of wonderful breadth, and splendidly filled out in all points; and his three store pigs wonderful for fine and delicate quality. Mr. Wiley's store pigs are also beauties. Lord Wenlock, too, showed some very fine pigs. Among the boars and sows under 12 months old are several really wonderful for their growth and early development. The class of young small-breed sows is one of the best we have seen. In the Extra Stock class were five little black beauties shown by Mr. Barrowby, of Dishforth, but otherwise they are not much in fashion in this county.

The show of horses is not only far greater than has been known before in the history of the Society, but is quite unexampled even by the Royal Society; for there is a total of 283 entries, more than one-half in excess of last year, and nearly double the number shown at Salisbury. Of the character of the show it is hardly needful to say more than that the reputation of Yorkshire for first-class hunters is now raised higher than ever, while the hackneys, coaching, and agricultural horses have never been better; in fact, we have never before known so many first-rate horses to be brought together, though we could not single out any one as being so superb as to utterly eclipse all the rest. There were 62 hunters, 61 coaching horses, 53 roadsters and hackneys, 70 agricultural horses, and 37 extra stock. The hunters are classed as "Stallions," "Mares and foals," "Three-year-old geldings," "Three-year-old fillies," "Four-year-old hunters, either geldings or mares," and a special class for "Five-year-old hunters, mares or geldings, possessing not less than three crosses of blood," for which prizes were given by Lord Wenlock. Roadsters and hackneys are classed as "Stallions," "Mares and foals," "Three-year-old geldings or fillies," and "Geldings or mares, not less than four years old and not exceeding six." Coaching horses are divided into "Stallions," "Mares and foals," "Three-year-old geldings," "Two-year-old geldings," and "Two-year-old fillies." Of agricultural horses we have "Stallions," "Mares and foals," "Three-year-old geldings or fillies," "Two-year-old fillies," "Yearling geldings or fillies," and a real practical class for pairs of horses (of either sex) worked during the season; and of course a large Extra Stock class.

As may be expected, a great deal of interest was concentrated about the ring in which the hunter stallions were shown. We most all admired "Dagobert," Mr. Batty's dark-brown horse, which gained the first prize, having wonderful strength, and certainly the best back in the yard. He was bred by the Duke of Richmond, and is seven years old. Mr. Manfield's second prize horse, "Spencer" is a good animal; but we like the size and style of the old chesnut, "The King of Diamonds," of Mr. MacIntosh of Berwick-in-Elmet; also "King Caradoc," the black stallion of Mr. Strickland of Wassand, having a splendidly showy head and neck, and good action; and again, "Wetherbit," a small horse, but extraordinarily good in most of his points. Good as was the show of hunting stallions last year, a horse which gained high honours then is now "nowhere." And, indeed, all the horse classes exhibited marked advance, excepting perhaps the pairs of farm-horses worked during the season. The stallions for agricultural purposes formed a magnificent class, great disappointment being felt that Mr. Hildyard's "Matchless" did not appear, although entered in the class. Some of the horses were amazingly powerful, and heavy enough for drays. The hunting mares and foals were extraordinarily good, especially Mr. Booth's chestnut mare, "Marigold," and the bay mare of Mr. Barber, of Tang Hall. The mares and foals for coaching were excellent, but the roadsters of exceedingly great merit. Among the mares and foals for agricultural purposes we admired the powerful and useful as well as noble mare of Mr. Angus, of Norwich. "Black Bess," exhibited and bred by the Earl of Carlisle, is also an exceedingly good one. There were one or two splendid hunting geldings, and Mr. J. Johnson's brown coaching gelding is very fine indeed. The three-year-old hackneys were uncommonly good; and we would mention Mr. J. Wilde's "Pretender" as very superior. Among the pairs of farm horses were some very powerful and active teams, precisely adapted for stepping briskly with a heavy load behind them. The four-year-old hunters were a very superior class. In the Extra Stock we looked at some wonderfully fine mares—Mr. Vyner's strong hunter for instance. "Hobbie Noble" obtained no prize; but another horse of Mr. Grove's, "The Conqueror," of amazing size and substance, took the first prize. In Lord Wenlock's special class for five-year-old hunters, there were a few really good ones; Mr. Booth's bay "Jeweller" taking the first, Mr. Coulson's bay second, and a very good mare, high and with remarkable fore-quarter, shown by Mr. P. Stevenson, of Rainton, commended.

Of poultry there were 220 pens, the same number as last year, and greatly exceeding the number at Salisbury. The Spanish fowls were exceedingly good. Some of the Dorkings were magnificent birds, and the Dorking chickens so good a show that the whole class was commended as "highly meritorious." Mr. Berwick, of Helmley, gains the prize here; and we much admired the beautiful white chickens of Mr. Walker, of Skipton. The Cochin-China (black or white) were very fine. The game fowl appeared in good plumage; the chicken class being especially good. We liked the golden-spangled Hamburghs; and Mr. Dawson's white Bantams should be mentioned as little beauties. The Dorking cocks were extraordinarily good; the Cochin-China cocks of immense size. The class of Aylesbury ducks was good, and the extra stock poultry class, including Mr. Duggleby's eight splended Cochin-China chickens, was "all commended."

One of the most interesting exhibitions in the yard was Mr. Barratt's (of Wakefield) collection of agricultural seeds and grasses, containing about four hundred specimens of each. The grasses were in great perfection, each growing in separate pots. It was highly instructive to have placed before you every known seed and plant in the kingdom, from the finest pasture-grasses and cereals to the most obnoxious weeds. Mr. B. received both the gold medals. Mr. Hutchinson, of Sowerby, also exhibited a very interesting stand of seeds and specimens of roots and grasses. Major Quentin exhibited some very fine specimens of grain, clover, and rye (grown in the sister country, near to Waterford); a specimen of white oats, 21 stems from one grain; beans very fine; wheat, 58 ears from one grain; Italian rye-grass, cut 20th May, 4 ft. 6 in. long, cut again 27th July, measuring 4 feet, *i.e.*, 8 ft. 6 in. in two cuttings. His specimens of wheat had some surprising ears 7 inches in length. His specimens of wheats in grain showed as follows: 78 grains weighed 77 grains, 85 grains weighed 83 grains, and 75 grains weighed 77 grains respectively.

PRIZES FOR CATTLE, &c.

JUDGES.—J. Thompson, Anlaby Hall, Hull.
T. Crofton, Holywell, Durham,

SHORTHORNS.

Bulls of any Age.

First prize of £25 to Lord Faversham, Duncombe Park, Helmsley.

Second prize of £10 to Mr. T Wetherell, Ouldborough, Darlington.

Highly commended.—Lord Faversham's bull.

Commended.—Mr. Barroby's bull and Mr. R. Brooke's bull.

Yearling Bulls.

First prize of £20 to Mr. F. H. Fawkes, Farnley Hall, Otley.

Second prize of £10 to Sir C. R. Tempest, Bart., Broughton Hall, Skipton.

Highly commended.—Mr. T. Wetherell's bull.

Commended.—Mr. T. Barber's bull and Mr. F. H. Fawkes' bull.

Bull Calves upwards of five months old.

First prize of £10 to Mr. R. Booth, Warlaby, Northallerton.

Second prize of £5 to Mr. S. Marjoribanks, Bushey Grove, Watford.

Commended.—Mr. M. Barrowby's, Mr. J. Renton's, and Mr. J. R. Singleton's bull calves.

Cows of any age, in calf or in milk.

First prize of £15 to Lieut.-Col. Towneley, Towneley Park, Burnley.

Second prize of £5 to Mr. T. Wetherell.

Highly commended.—Mr. J. B. Booth's and Mr. R. Booth's cows.

Commended.—Mr. W. Fletcher's and Mr. L. Thompson's cows.

Three-year-old Cows, in calf or in milk, and having had a calf.

Prize of £10 to Mr. R. Booth, Warlaby, Northallerton.

Two-year-old Heifers.

First prize of £10 to Mr. R. Booth.

Second prize of £5 to Mr. H. W. Ripley, Hightcliffe, Halifax.

Yearling Heifers.

First prize of £10 to Lieut.-Col. Towneley.

Second Prize of £5 to Mr. R. Booth,

Highly commended.—Lord Faversham's, Mr. J. Yorke's, and Mr. J. Emmerson's heifers.

Commended.—Mr. J. B. Booth's, Mr. J. Hall's, Mr. J. Yorke's, Mr. J. Milnen's, and Mr. R. Gunter's heifers.

Heifer Calves, upwards of five months old.

First prize of £5 to Mr. R Booth.

Second prize of £3 to Lord Faversham.

Commended.—Lord Faversham's, Sir C. R. Tempest's, and Lieut.-Col. Towneley's calves.

Fat Oxen of any age.

First prize of £10 to Mr. J. T. Robinson, Leckby Palace, Topcliffe.

Second prize of £5 to Lieut.-Col. Towneley.

Commended.—Mr. H. Warneford's and Mr. H. S. Thompson's oxen.

Fat Cows of any age.

Prize of £5 to Lieut.-Col. Towneley.

Highly commended.—Mr. W. Fletcher's cow.

CATTLE OF ANY BREED.

Cows for Dairy Purposes.

First prize of £5 to Mr. J. Outhwaite, Catterick, Richmond.

Second prize of £2 to Mr. W. Stead, Owlerton, Sheffield.

EXTRA STOCK CATTLE.

First prize to Mr. S. Wiley, Brandsby, York.

Second prize to Lieut.-Col. Towneley.

SHEEP.

JUDGES.—Richard Woods, of Osberton, Worksop.
W. Sanday, of Holme Pierrepont, Notts.
W. Bartholomew, Langton, Wragby.

LEICESTERS OR LONG-WOOLLED SHEEP.

Shearling Rams.

First prize of £15 to Mr. George Walmsley, Rudstone, Bridlington.

Second prize of £5 to Mr. J. Borton, Barton House, Malton.

Rams of any age.

First prize of £10 to Mr. J. Borton.

Second prize of £5 to Mr. S. Wiley.

Highly commended.—Mr. J. Borton's, Mr. R. Dawson's, and Mr. W. Angus's rams.

Commended.—Mr. W. Angus's ram.

Pens of Five Ewes.

First prize of £5 to Mr. W. Taylor, Thornthorpe, Malton.

Second prize of £3 to Mr. F. Holiday, North Burton, Malton.

Commended.—Mr. E. D. Conyer's pen of ewes.

Pens of Five Shearling Wethers.

Prize of £5 to Mr. J. Hopper, Brompton, Pickering.

Pens of Five Shearling Gimmers.

First prize of £10 to Mr. S. Wiley.

Prize of £5 to Mr. W. Abraham, Barnetby-le-Wold, Ulceby.

Prize of £5 to Lord Wenlock.

Highly commended.—Mr. W. Taylor's pen of gimmers.

Commended.—Mr E. D. Conyer's pen of gimmers.

Rams of any age.

Prize of £10 to Mr. T. Marris, The Chase, Ulceby.

Prize of £10 to Lord Wenlock.

Prize of £10 to Mr. T. B. Browne, Hampen, Andoversford,

SOUTHDOWNS.

Rams of any age.

Prize of £10 to Mr. T. Marris.

WESTDOWNS.

Rams of any age.

Prize of £10 to Lord Wenlock.

Pens of Five Shearling Gimmers.

Prize of £5 to Lord Wenlock.

COTSWOLDS.

Rams of any age.

Prize of £10 to Mr. T. B. Browne, Hampen.

EXTRA STOCK—SHEEP.

Prize to Mr. S. Wiley for the best two ewes.

Prize to Mr. J. Borton for the best two-shear ram.

PIGS.

JUDGES.—R. Woods, Osberton, Worksop.
R. Sanday, Holme Pierrepont, Notts,
W. Bartholomew, Langton, Wragby.

Boars of Large Breed.

First prize of £5 to Mr. J. Tulley, Truewell Farm, Keighley.

Second prize of £2 to Mr. M. Gavins, Woodhouse Carr, Leeds.

Sows of Large Breed, in pig or milk.

First prize of £5 to Mr. J. Tulley.

Second prize of £2 to Mr. J. Palmer, Thorlby, Skipton.

Boars of Small Breed.

First prize of £5 to Mr. G. Mangles, Givendale, Ripon.

Second prize of £2 to Viscount Galway, Serlby Hall, Bawtry.

Sows of Small Breed, in pig or milk.

First prize of £5 to Mr. G. Mangles.

Second prize of £2 to Viscount Galway.

Highly commended.—Lord Wenlock's and Viscount Galway's sows.

Sows of any Breed, in pig or milk.

(Not qualified to compete in classes 24 or 26.)

First prize of £5 to Mr. J. W. Metcalfe, Acomb House, York.

Second prize of £2 to Mr. C. Haley, Sommerby-street, Leeds.

Boars of any Breed.

(Not qualified to compete in classes 23 and 25.)

First prize of £5 to Mr. M. Oddy, Spofforth, Wetherby.

Second prize of £2 to Mr. W. Field, Dudley Hill, Bradford.

Three Store Pigs, of any breed, and of the same litter, from four to nine months old.

First prize of £5 to Mr. G. Mangles.

Second prize of £2 to Mr. S. Wiley.

Highly commended.—Lord Wenlock's pigs.

Boars of Large Breed, under twelve months old.

Prize of £3 to Mr. T. Britton, York.

Sows of Large Breed, under twelve months old.

Prize of £3 to Mr. J. Palmer.

Boars of Small Breed, under twelve months old.

Prize of £3 to Mr. S. Wiley.

EXTRA STOCK—PIGS.

First prize to Mr. G. Hutchinson, Prospect House, York, for a litter of young pigs.

Second prize to Mr. M. Barroby, Dishforth, Thirsk, for five pigs.

HORSES.

JUDGES.—T. Brooks, Croxby, near Caistor.
Charles Garfitt, of Tabley Hall, near Knutsford.
W. Robinson, of Bonehill, near Tamworth.

Stallions for Hunters.

First prize of £10 to Mr. J. Batty, Bishop Monkton, Ripon.

Second prize of £5 to Mr. T. Manfield, Thirkleby Bridge, Thirsk.

Stallions for Coach Horses.

First prize of £10 to Mr. D. Holliday, Newland, Hull.

Second prize of £5 to Mr. T. Watson, Sneaton, Thorpe, Whitby.

Stallions for Roadsters.

First prize of £10 to Mr. P. Ramsdale, Goodmanham, Market Weighton.

Second prize of £5 to Mr. S. England, Cragg Top, Silsden.

Stallions for Agricultural Purposes.

First prize of £10 to Mr. R. Emsley, Clayton, Knaresbro'.

Second prize of £5 to Mr. J. Robinson, Grove Inn, Manchester.

Mares and Foals for Hunting.

Prize of £5 to Mr. J. B. Booth.

Commended.—Mr. J. S. Barber's mare and foal.

Mares and Foals for Coaching.

Prize of £5 to Mr. J. Cattle, Barton-le-street, Malton.

Roadster Mares and Foals.

Prize of £5 to Mr. P. Triffitt, Holme-on-Spalding-Moor, Hayton.

Mares and Foals for Agricultural Purposes.

Prize of £5 to the Earl of Carlisle, Castle Howard.

Three-year-old Hunting Geldings.

Prize of £5 to Mr. J. B. Booth.

Three-year-old Hunting Fillies.

Prize of 5*l.* to Mr. A. Christie, of Kirk Hammerton, York.

Three-year-old Coaching Geldings.

Prize of 5*l.* to Mr. J. Johnson, of Cayton, Scarboro'.

Highly commended—Mr. G. Burton Selby's gelding.

Three-year-old Hackney Geldings or Fillies.

Prize of 5*l.* to Mr. J. Lee, of Thirsk.

Commended.—Mr. J. Thompson's brown.

Three-year-old Geldings or Fillies for agricultural purposes.

Prize of 5*l.* to Mr. T. Dawson, of Poundsworth, Driffield.

Commended—Mr. J. Lofthouse's chesnut.

Two-year-old Coaching Geldings.

Prize of 5*l.* to Mr. B. Johnson, of Frodingham Bridge, Driffield.

Two-year-old Coaching Fillies.

Prize of 5*l.* to Mr. J. Wells, Booth Ferry House, Howden.

Two-year-old agricultural Geldings or Fillies.

Prize of 5*l.* to Mr. J. Walker, of Sand Hutton, York.

Commended—Mr. W. Harmston's br. "Bute."

Yearling Geldings or Fillies for agricultural purposes.

Prize of 5*l.* to Mr. L. Stephenson, of Tadcaster.

Commended—Messrs. J. and T. Appleyard's black.

Pairs of Horses, of either sex, for agricultural purposes, worked during the season.

Prize of 10*l.* to Mr. J. Styan, of Shipton, Yorkshire.

Hackney Geldings or Mares, not less than four years old, nor exceeding six.

Prize of 5*l.* to Mr. L. Hodgson, of Highthorne, Easingwold.

Commended—Mr. L. Hodgson's chesnut.

Four-year-old Hunters, Geldings, or Mares.

First prize of 10*l.* to Mr. L. Hodgson, of Highthorne, Easingwold.

Second prize of 5*l.* to Mr. J. T. Robinson, of Leckby Palace, Topcliffe.

Commended—Mr. G. Walmsley's chesnut.

EXTRA STOCK HORSES.

First prize to Mr. T. Groves, of Plumpton, Yorkshire.

Second prize to Mr. L. Hodgson, of Highthorne, Easingwold.

Given by the Right Hon. Lord Wenlock.

Five-year-old Hunters, Mares, or Geldings, warranted sound, and to possess not less than three crosses of blood.

First prize of 20*l.* to Mr. J. B. Booth, of Killerby, Catterick.

Second prize of 5*l.* to Mr. J. Coulson, of Gaterley, Castle Howard.

Commended—Mr. P. Stevenson's brown

PRIZES FOR IMPLEMENTS.

JUDGES.—R. Ray, of Forcett Valley, Darlington.
Peter Stevenson, of Rainton, near Ripon.
John Clarke, of Long Sutton, Lincolnshire.

For a combined thrashing and dressing machine, 15*l.*, to Messrs. E. and T. Humphries, of Pershore. *Highly commended*—The machine of Messrs. Davy Brothers, of Sheffield. *Commended*—That of Messrs. Roby and Co., of Lincoln.

For turnip pulpers, 3*l.*, to Mr. E. H. Bentall, of Maldon, Essex.

For small tools, 5*l.*, to Mr. W. Dove, of York.

For corn screen, 5*l.*, to Mr. John Palmer, of Stockton-on-Tees. Second prize, of 2*l.*, to Mr. Bobey.

For a grinding mill, 5*l.*, to Mr. W. Dove.

For the best winnowing machine, 5*l.*, to Mr. W. Sawney, of Beverley.

For the best chaff cutter for steam power, 5*l.*, to Mr. Cornes.

For the best chaff cutter for hand power, 3*l.*, to Messrs. Smith and Ashby, of Stamford. *Highly commended*—Messrs. Richmond and Chandler's implement.

For the best three-horse waggon, 5*l.*, to Mr. Busby, of Newton-le-Willows, Bedale.

For the best cart, 5*l.*, to Mr. Harland, Osbaldwick, near York.

For Spencer's registered weighing machine, 2*l.*, to Mr. Sawney, of Beverley.

For the best patent dry manure drill, 10*l.*, to Messrs. R. and J. Reeves, of Bratton, Westbury, Wilts.

For the best general purpose drill, 5*l.*, to Mr. J. Coultas, jun., of Grantham.

For a new patent steerage horse hoe, 2*l.*, to Mr. W. Smith, of Kettering.

For the best horse rake, 1*l.*, to Mr. George Pinkney, of Bridlington.

For the best assortment of harrows, 5*l.*, to Mr. John Barker, of Dunnington.

For a sawing machine, 1*l.*, to Mr. W. Flint, of Acomb, near York.

For the best turnip drill, capable of depositing seeds and artificial manures on the ridge, 5*l.*, to Messrs. Reeves.

For the best compound action mill for crushing and grinding, 3*l.*, to Messrs. Patterson, of Beverley.

For the best assortment of ploughs, 10*l*, to Mr. W. Dove.

For Palmer's Union reaping machine, 15*l.*; gold medal reserved.

For Hanson's potato digger, silver medal, to Mr. R. Coleman, of Chelmsford.

For the exhibition of several cooking rages, register, and other stoves, and ornamental chimney pieces, silver medal, to Mr. W. Walker, of Walmgate, York.

For a steam engine for driving thrashing machines, &c., 2*l.*, to Mr. W. Cambridge, of Bristol.

Mr. E. H. Bentall's light broadshare highly commended.

Mr. W. Watkinson's liquid manure drill highly commended.

Mr. J. Wray's one-horse reaping machine commended.

Mr. T. Simpson's steam cooking apparatus commended.

Mr. T. Butcher's wrought-iron turnip scuffler, with skeith coulter commended.

Mr. R. Penty's two-rowed turnip drill commended.

Mr. J. Palmer's corn separator commended.

THE COUNCIL DINNER.

On Wednesday, the council of the society and other gentlemen, about fifty in number, sat down to an excellent dinner in the De Grey Rooms; Lord Greenock, the president of the society, in the chair.

After the usual loyal toasts, the healths of the Hon. Col. Duncombe and the Lord Mayor were given. The noble Chairman then gave, in an appropriate speech, "Success to the Yorkshire Agricultural Society."

H. S. Thompson, Esq., responded, observing that he had a most cordial wish for the success of the society, because he believed it was an association well calculated to do, and really had in a great measure promoted very much the improvement and progress of agriculture in that county. He directed attention to the high price of food and the comparative scarcity of cattle in this country, and stated what he thought would be to the advantage of the consumers as well as the farmers. He then alluded to the fact that sufficient attention was not paid to the improvement of grass land, and suggested that wherever the land had any strength in it, they ought to drain it first, and then till it; but he recommended that land of a light sandy quality should be ploughed up. He also advised farmers to keep their manure for arable land, but to use hand tillage for grass, to the extent of one cwt. of guano and one cwt. of nitrate of soda to the acre. In the third year after this application, land that was previously only fit to keep animals in a growing state would then fatten them, and the land would be as different in quality as grass land could be. Mr. Horsfall, of Burley, near Otley, had caused strong wet land, with rushes growing upon it, to produce what was worth £16 per acre, whilst the average produce of the grass land of that county would be worth only about £4 per acre, but rather below than above that sum: that which was not worth £4 per acre might be made to be worth £8. If they adopted the plan he had suggested judiciously, none of them would be disappointed in the result.

Lord Wenlock said he quite agreed with all that had fallen from Mr. Thompson with respect to the importance of more attention being paid to grass land, for he felt assured that the farmer was neglecting his best friend in not trying more than is done to improve it. He, however, had risen more especially for the purpose of proposing the next toast—the health of their noble president, Lord Greenock. That was a toast which he knew would be received with enthusiasm by the company, not only as Yorkshiremen, but as Englishmen, because the name of Cathcart was one which at once aroused their feelings of gratitude, on account of the benefits which those who had borne it had conferred upon this country, in diplomacy, and still more in war.

The noble Chairman, in returning thanks, expressed a hope that he should never do any discredit to the name of those who had gone before him. He assured them that he had no pretensions but to an endeavour to do his duty, not only by being a good cultivator of the soil, but also by cultivating kindly and friendly relations with his neighbours and with his fellow-men.

Lord Bolton then gave "The Council of the Society," to which J. W. Childers, Esq., returned thanks, and gave "The Judges," to which Mr. Croft returned thanks.

Sir J. V. B. Johnstone, Bart., said, in some respects, as regarded agriculture, he had not a lucky star on him that evening. At Salisbury he was not well enough to partake of Mr. Sidney Herbert's hospitality, or to witness Mr. Boydell's traction engine ascend the tremendous hill there, of which they had all at least heard; and since then he had been delayed in London in order to attend to his parliamentary duties, not the least important of which had been that of assisting in the endeavour that was being made to retain in York the registry for wills in the North and East Ridings. He had only left London that morning at eleven o'clock, and had therefore little opportunity of seeing anything here which enabled him to speak of the present meeting. Nevertheless he had no hesitation in proposing the next toast on the list, viz., "The Royal English, Highland, and Irish Agricultural Societies," with the former of which he had been connected almost from the date of its foundation. After enlarging on the importance of these three great societies, attributing to their operations the success which had attended the efforts that had been made to promote improvement in the cultivation of the soil and the rearing of stock, the worthy baronet proceeded to offer some remarks on the complaints that have been made recently with respect to the arrangements of the Royal Society, more especially as regards the annual dinner, and expressed his regret to find that the only let-down at York seemed to be, judging from the smallness of the attendance at this dinner, that the farmers of Yorkshire had lost their appetites. He assured the company that the council of the Royal Society were always ready to receive any practical suggestions or good advice; and then said a few words on the subject of the introduction of steam in connection with agricultural pursuits, expressing a belief that though its progress may not be fast, still it is certain, and that the day will come when steam will be found a very important auxiliary in the carrying out of agricultural operations.

D. L. Milne Howe, Esq., said, on behalf of the Royal Society, of which he was a member, on behalf of the Highland Society, of which he was a member and a director, and on behalf of the Irish Agricultural Society, of which he was a sincere friend, he rose to acknowledge the toast which had just been received. As one who was not unacquainted with agricultural exhibitions throughout the kingdom, he congratulated the society upon the great success, he might almost say the splendour, of the show they had had that day. The Yorkshire Society, though nominally provincial, was truly national in its character and usefulness, drawing forth, by its liberal premiums and judicious commendations, exhibitors of splendid stock and of ingenious implements from all parts of the kingdom.

The Hon. Colonel Duncombe gave the healths of "The successful competitors."

S. Wiley, Esq., responded to the toast, and congratulated the society upon the improvements which they effected year by year. He was pleased to say that he had exhibited a few animals which had met with the approbation of the judges, who were very scientific judges; and he hoped to be equally successful, if spared, another year.

Lord Teignmouth proposed "The unsuccessful competitors." He expressed his pleasure that the council had decided to hold the next meeting of the society at Northallerton, near to which town he resided, and where, he believed, a warm and kindly reception would be accorded to them.

The Rev. R. Brook, of Gateforth, Selby, responded on behalf of the unsuccessful candidates, whom he characterized as a patient and enduring body of men. He called them patient, because it was the characteristic of a patient man not to be deterred by a first mischance, but to watch and wait for an opportunity to come forward again under better conditions, and with more assured prospects of success. Like Antæus—if his classical recollections served him right—rebounding from his mother-earth, he is refreshed and renewed from every successive defeat. He called them much enduring, because, after they had reared stock which was the pride of their district and the admiration of their neighbours, they had come to the show, and been unsuccessful. But, though defeated, they were not disgraced; and they might hope to be successful another time.

J. Greenwood, Esq., gave "The labourers"; after which, he proposed the health of the indefatigable Secretary of the Yorkshire Society.

Mr. Hannam, in acknowledging the compliment which had been paid to him, said that the success of the present exhibition was not to be attributed solely to his individual efforts, but was to be traced, in no small degree, to the exertions of the local committee and the local secretaries, from whom he had received every assistance. He also offered his acknowledgments to the noble Chairman of the society, for the readiness with which he had given him advice upon any questions of difficulty; and assured them that he was rewarded by their kindness for any exertions he had made.

The noble Chairman then gave the last toast on the list—"The ladies"—and the company separated.

A CATALOGUE OF THE IMPLEMENTS EXHIBITED AT THE SALISBURY MEETING OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

This catalogue is given here more in the way of a reference hereafter, than with the idea of supplying any information as to who exhibited at the Salisbury Meeting. At the same time it is curious to note how small a per-centage of visitors provided themselves with what might be considered so necessary a guide-book. The work, however, has something of a standard authority, extending far beyond the few days upon which it is procurable. The catalogue of the Salisbury entry of implements is, in fact, more or less of a Directory for the year. There is not a man of any repute as a maker but has his stand here. There is not an invention of any established use or further promise but is as surely registered. It is, then, for the advantage of either, buyer or seller, that, in accordance with our custom, we reproduce the catalogue in our columns. We have already dwelt on the merits of much of this machinery. We have duly announced the estimation in which the implements entered for trial stood with the judges and the public. They are now left to offer their own recommendations. A manufacturer could have no better, or at any rate, no fairer advertisement; while a customer commands the whole market at one glance. There are only a few perhaps who preserve the catalogues they buy in the yard. Might we request a little more care with that they now find in their magazine?

Thomas Bigg, of Leicester House, Great Dover-street, Southwark, Surrey.

A new and improved moveable sheep-dipping apparatus on wheels, price, complete with three galvanized iron cradles, 12*l.*; a sheep-dipping apparatus, price 5*l.*; a sheep-dipping apparatus, price 4*l.*; and a sheep-dipping apparatus, price 3*l.*, all invented, improved, and manufactured by the exhibiter.

James Dunlop, of Haddington.

A bridle for cart or farm harness, price 19s. 6d., and a neck collar for cart or farm harness, price 18s. 6d., both improved and manufactured by the exhibiter; a patent self-adjusting saddle for cart or farm harness, price 1*l.* 14s. 6d., invented, improved, and manufactured by the exhibiter; a breeching for cart or farm harness, price 1*l.* 7s. 6d.; a shaft belly band, price 10s. 6d.; a set of hames for cart or farm harness, price 8s. 6d.; and a bridle for cart or farm harness, price 19s. 6d., all improved and manufactured by the exhibiter; a neck collar for cart or farm harness, price 1*l.* 18s. 6d., invented, improved, and manufactured by the exhibiter; a back band for leading horse in cart or waggon, price 11s. 6d., and another size price 9s. 6d.; a belly band for leading horse in cart or waggon, price 8s. 6d.; a set of trace chains for leading horse in cart or waggon, price 10s. 6d.; a back band for plough harness, price 9s. 6d.; a bridle for cart or farm harness, price 10s. 6d.; a nose bag for feeding horses, price 9s. 6d.; and a stall collar, price 12s. 6d., all improved and manufactured by the exhibiter; a neck collar for carriage or gig horse, price 2*l.* 12s. 6d.; and the following (not for sale)—a model of a patent self-adjusting saddle, invented, improved, and manufactured by the exhibiter; a model of a saddle with boards fixed to the crib, manufactured by the exhibiter; and a model frame of an expanding neck collar, invented, improved, and manufactured by the exhibiter.

William Wyatt, of Hardwick House, Bury St. Edmund's, Suffolk.

A hay machine with new adjustments, price 14*l.* 14s., invented and manufactured by the exhibiter.

William Bray, of Folkstone, Kent,

(New implement) a traction engine, price 550*l.*, invented and manufactured by the exhibiter, with Barron's patent boiler by Hughes; (new implement) a plough frame, price 150*l.*, invented and manufactured by the exhibiter.

Bernhard Samuelson, of Banbury, Oxfordshire.

A patent Gardner's turnip cutter (double action), price mounted on wheels and with handles for easily moving about 6*l.* 14s. 6d., without wheels and handles 6*l.* 2s. 6d., invented by the late James Gardner, improved and manufactured by the exhibiter (obtained the Great Exhibition prize medal, 1851, the £5 prize at the Royal Agricultural Society's Show at Lewes in 1852); another description of Gardner's turnip cutter (double action), price 5*l.* 13s. 6d., if on wheels and with handles to move easily about 6*l.* 5s. 6d. (obtained the £5 prize at the Royal Agricultural Society's shows at Norwich, 1849, Exeter, 1850, Gloucester, 1853, Lincoln, 1854, and Carlisle, 1855); and another size, price without pulley 5*l.* 10s., turned pulleys 15s. extra; a patent Gardner's turnip cutter for sheep, price with handles and wheels 5*l.* 14s. 6d., without 5*l.* 2s. 6d.; and a patent Gardner's turnip cutter for sheep and lambs, price to cut for sheep and lambs 4*l.* 13s. 6d., if for sheep only, without patented improvements, 4*l.* 10s., all invented by the late James Gardner, of Banbury, improved and manufactured by the exhibiter; a patent Gardner's turnip cutter for cattle, price 4*l.* 10s., on travelling wheels 5*l.* 2s., invented by the late James Gardner, of Banbury, improved by Alexander Samuelson and the exhibiter, and manufactured by the exhibiter; a patent Gardner's turnip cutter, price 4*l.* 10s., if mounted on wheels 5*l.* 2s., invented by the late James Gardner, of Banbury, improved and manufactured by the exhibiter; a turnip grater (No. 1), price 4*l.* 10s., a turnip grater (No. 2), price 4*l.* 10s., and a turnip grater (No. 3), price 4*l.* 10s., all invented by Edmund Moody, of Maiden Bradley, improved and manufactured by the exhibiter; a patent hand root pulping and mincing machine, price 6*l.* 10s., invented and improved by Frederick Phillips, of Brandon, and manufactured by the exhibiter; a patent root grater (No. 2), price, having two grating discs, 5*l.*, and a patent root grater (No. 3), price 3*l.* 10s., if boxed in to prevent the shreds from flying about 4*l.* 5s., both invented by Bushe and Barter, of Lismore, Ireland, improved and manufactured by the exhibiter; a lever turnip slicer, price 1*l.* 15s., (new implement) a patent combined root grater and chaff cutter (No. 1), price for hand power 6*l.* 10s., and (new implement) a patent combined root grater and chaff cutter (No. 2), price 9*l.*, all invented and manufactured by the exhibiter; an improved Cornes' chaff cutter (K 10), price 13*l.*, another size price 14*l.* 5s., both invented by James Cornes, sen., improved and manufactured by the exhibiter; a Cornes' two-knife chaff cutter (K 9), price 12*l.*, without reversing and stop motion (K 8) 11*l.*, invented by John Cornes, sen., and manufactured by the exhibiter; a Cornes' three-knife chaff cutting machine (K 7), price 11*l.*, if without the reversing and stop motion (K 6) 10*l.*, invented by John Cornes, sen., improved and manufactured by the exhibiter; a Cornes' chaff cutter (K 5½), price 9*l.*, and a Cornes' chaff cutter (K 4), price 4*l.* 15s., both invented by John Cornes, sen., manufactured by the exhibiter; a rising mouth (or K 3) chaff cutting machine, price 4*l.*, invented, improved, and manufactured by the exhibiter; a small chaff cutter for exportation, price 3*l.* 5s., for six packed in cases 21*l.*, invented and manufactured by the exhibiter; an economical chaff cutting machine (K 0), price 3*l.*, invented, improved, and manufactured by the exhibiter; a roller mill for crushing malt and linseed, splitting beans, &c., (No. 5), price 9*l.*, without bean mill 7*l.* 10s., a roller mill for crushing all descriptions of grain and seed, price 9*l.* 15s., a roller mill (No. 3 A) for crushing all descriptions of grain, seed, beans, &c., price 5*l.* 15s., and a roller mill (3 B) for crushing all descriptions of grain and seed except beans and peas, price 5*l.*, all improved and manufactured by the exhibiter; a malt crushing mill (No. 3), price 6*l.* 15s., invented, improved, and manufactured by the exhibiter; a universal corn crushing or bruising mill (No. 2), price 5*l.* 10s., invented by the late Mr. Stratton, of Bristol, improved and manufactured by the exhibiter; a bean splitting mill, price 2*l.* 2s. 6d., and a linseed cake breaking machine (No. 5), price 9*l.*, if with pulleys for steam power 10*l.* 10s., both invented, improved, and manufactured by the exhibiter; a linseed cake breaking machine (No. 3), price 3*l.* 15s., improved and manufactured by the exhibiter; four sizes of a registered Budding's lawn mowing machine or grass cutter, price, including case, from 11*l.* 10s. to 5*l.* 10s., invented by E. Budding, of Dursley, improved and manufactured by the exhibiter; a nine-inch lawn mowing machine or grass cutter, price 2*l.* 15s., invented, improved, and manufactured by the exhibiter; a garden roller, price 3*l.* 6s., designed and manufactured by the exhibiter; a set of patent self-relieving chain harrows, price 5*l.* 10s., 5 feet wide 3*l.* 15s., invented by John Cartwright of Shrewsbury, and manufactured by the exhibiter; a Crosskill's patent clod crusher or serrated roller, price 6 feet long by 30 inches diameter 19*l.* 10s., without travelling wheels 17*l.* 10s., invented by Wm. Crosskill, of Beverley, and manufactured by the exhibiter (has received many Royal Agricultural Society's and other prizes); a Cambridge's patent press roller or clod crusher, price 6 feet long by 26 inches diameter 16*l.*, invented by William Cambridge, of Bristol, and manufactured by the exhibiter (has also received many prizes); a Patterson's patent roller and clod crusher, price 6 feet long by 31 inches diameter 19*l.* 10s., without travelling wheels 18*l.*, invented by John Patterson, of Beverley, and manufactured by the exhibiter (has been awarded the Royal Agricultural Society's and other prizes); an improved field roller, price 10*l.*, with the whippletree adapting it for two horses 10*l.* 12s, and a strong wrought iron five-tine horse hoe, price 3*l.* 10s., with three tines only 2*l.* 16s., both manufactured by the exhibiter; a patent turnip thinner, price 6*l.*, with hoes to hoe the whole surface 7*l.* (has received three Royal Agricultural Society's money prizes, three Bath and West of England Society's prizes, and many local ones), (new implement) a patent horse hoe for hill sides, price 5*l.*, and (new implement) a hand manure distributor, price 3*l.*, all invented by Thomas Huckvale, of Choice Hill, and manufactured by the exhibiter; an improved double-acting haymaking machine, price 13*l.* 13s., manufactured by the exhibiter; a patent self-relieving horse-rake, price 6 feet wide 8*l.* 8s., without self-relieving apparatus 7*l.* 10s., invented by John Marychurch, of Haverfordwest, and manufactured by the exhibiter (awarded first prize of gold medal at Paris, 1855, and the special award of the Bath and West of England Society at Yeovil, 1856); a four-inch Kase's patent double-action force and suction pump and fire engine, price 7*l.* 19s., on wrought iron stand 9*l.* 4s., invented by Kase, of America, improved and manufactured by the exhibiter; a galvanized sheet iron barrel pump, price 2*l.* 5s., with sheet copper barrel 3*l.* 12s. 6d., gutta percha suction pipe for ditto from 1s. 9d. to 2s. 6d. per foot, invented and manufactured by the exhibiter; an Anthony's patent American churn, price 2*l.* 8s. 6d., without stand 2*l.* 0s. 6d., invented by C. Anthony, of Pittsburgh, U. S., improved by Burgess and Key, of London, and manufactured by the exhibiter (took the Royal Agricultural Society's silver medal at Exeter, a prize medal at the Great Exhibition of 1851, the prize at Gloucester, 1853, and at Carlisle 1855); a registered atmospheric churn, price 1*l.* 11s. 6d., on stand 2*l.*, invented and manufactured by the exhibiter; an improved portable mangle (No. 3), price 4*l.* 12s., without stand 4*l.*, a patent American floating ball washing machine (No. 2), price 6*l.*, a patent American floating ball washing machine (No. 1), price 3*l.*, and a 3 cwt. weighing machine, price 2*l.*, for 4 cwt. 2*l.* 8s., all manufactured by the exhibiter; a box of linseed cake and manure, manufactured by Messrs. Dixon and Cardus, of Southampton.

MARIE PIERE AMARANTHE FERDINAND MAZIER, of l'Aigle (Orne), France.

A reaping machine, price at the exhibiter's residence in France 1,000 fr. (£40), and (new implement) a mowing machine, price at the exhibiter's residence in France 800 fr. (£32)

JOHN FREER, of Rothley, near Loughborough, Leicestershire.

(New implement) an eight-row patent grain and seed-planting machine, price 55*l.*, invented and manufactured by the exhibiter.

JAMES HAYES, of Elton, near Oundle, Huntingdonshire.

A steam-power combined thrashing machine, price 95*l.*, (new implement) a patent portable straw elevator, price 38*l.*, a grinding mill, price 37*l.*, a grinding mill, price 35*l.*, a grinding mill, price 17*l*, and a flour-dressing machine, price 13*l.*, all invented, improved, and manufactured by the exhibiter.

RICHARD HORNSBY AND SON, of Spittlegate Iron Works, Grantham, Lincolnshire.

A drilling machine for corn, seed, and general purposes, price complete with manure box, coulters, &c., fitted for general purposes, 42*l.* 5s., extra with a separate corn box, corn coulters, &c., 8*l.* 15s. (received the first prize of £10 from the Royal Agricultural Society at Lincoln, 1854, £10 at Lewes, 1852, £15 at Norwich, 1849, £15 at York, 1848, £15 at Newcastle-upon-Tyne, 1846, £15 at Shrewsbury, 1845, £10 at Derby, 1843, £30 at Bristol, 1842, and £25 at Liverpool, 1841); a ten-row patent corn and seed drill on an improved principle, price 26*l.* 10s., if with side-hill motion 3*l.* 10s. extra (received the Council medal at the Great Exhibition, 1851, the first prize of £10 from the Royal Agricultural Society at their meeting held at Carlisle, 1855, £10 at Lincoln, 1854, £10 at Gloucester, 1853, £10 at Lewes, 1852, £10 and a prize medal at Exeter, 1850); a twelve-row patent corn drill, price 29*l.* 10s.; an improved patent fore-carriage steerage, price 4*l.* 10s. (received the prize medal of the Royal Agricultural Society of England at the meeting held at Exeter, 1850); a patent small occupation drill, price 19*l.* 5s. (received the Royal Agricultural Society's prize of £5 at Carlisle, 1855); a patent drill for turnips, mangel wurzel, and manure, price 29*l.* 12s. (received the first prize of £5 as the best exhibited at the Royal Agricultural Society's meeting at Lincoln, 1854, £10 at Gloucester, 1853, £10 at Lewes, 1852, £10 at Exeter, 1850, £10 at Newcastle, 1849, and £10 at Shrewsbury, 1845); a two-row patent ridge drill for turnips, mangel wurzel and manure, price 29*l.* (received the Council medal at the Great Exhibition, 1851, the first prize of £5 at the Royal Agricultural meeting at Carlisle, 1855, £5 at Lincoln, 1854, £10 at Gloucester, 1853, £10 at Lewes, 1852, £10 at Exeter, 1850, £10 at Norwich, 1849, £10 at York, 1848, £10 at Shrewsbury, 1845, £10 at Liverpool, 1841); two nine-horse power patent portable steam engines, price 275*l.* (the Council medal was awarded to this engine at the Exhibition in 1851, it also received the first prize of £20 at the meeting of the Royal Agricultural Society of England at Lincoln, 1854, £10 at Gloucester, 1853, £40 at Lewes, 1852, £50 at Exeter, 1850, and £50 at York, 1848); an eight-horse power patent portable steam engine, price 255*l.*; a seven-horse power patent portable steam engine, price 235*l.*; an improved patent portable combined thrashing, shaking, and dressing machine, price 108*l.* (received the first prize of £20 at the Royal Agricultural Society's meeting at Carlisle in 1855); two improved patent portable combined finishing, thrashing, shaking, and dressing machines, price 130*l.*; a patent corn dressing or winnowing machine, price 12*l.* 10s. (the Council medal was awarded to this machine at the Great Exhibition in 1851, it has also received the following first prizes from the Royal Agricultural Society of England, viz., £5 at Carlisle, 1855, £5 at Lincoln, 1854, £5 at Gloucester, 1853, £10 at Lewes, 1852, £10 at Exeter, 1850, £10 at Norwich, 1849, £10 at York, 1848, and £3 at Newcastle, 1846); a patent corn dressing and winnowing machine, price £12 (received the first prize of £5 from the Royal Agricultural Society of England at their meeting held at Gloucester, 1853); an improved patent corn grinding mill for agricultural purposes, price 39*l.* 3s., if fitted with an improved crane to lift the runners for convenience of dressing 6*l.* extra; an improved patent corn grinding mill, price 59*l.* 3s., if fitted with an improved crane to lift the runners for convenience of dressing 6*l.* extra.——N.B.—All the articles exhibited on this stand were invented, improved, and manufactured by the exhibiters.

JAMES COULTAS, jun., of Spittlegate, near Grantham, Lincolnshire.

(New implement) a general purpose drill, price 42*l.*, and (new implement) a corn and seed drill, price 26*l.* 10s., if with fore-steerage 4*l.* 10s. extra, invented by James Coultas, sen., of Grantham, improved and manufactured by the exhibiter; (new implement) a turnip and mangel-wurzel drill, price 23*l.*, invented, improved, and manufactured by the exhibiter; (new implement) a turnip mincing machine, price 5*l.*, invented by Messrs. Rhodes and Co., of Nottingham, improved and manufactured by the exhibiter; a dsessing machine and blower, price 11*l.* 11s., and a corn and seed blower, price 5*l.*, improved and manufactured by the exhibiter; (new implement) a sociable, called "The Grantham Sociable," price 50*l.*, if with pole and splinter-bar for two horses 5*l.* 5s. extra, invented and manufactured by Richard John Boyall, of Grantham.

F. M'NEILL AND CO., Patent Asphalted Felt Roofing Works, Bunhill-row, London.

Patent asphalted roofing felt, price 1d. per foot, manufactured by the exhibiters.

JOHN GREEN, of Saffron Walden, Essex.

An improved horse hoe, price 12*l.* 12s., if fitted with two pairs of shafts 1*l.* 1s. extra, an improved steerage horse hoe, price 7*l.* 10s., an improved horse hoe, price 8*l.*, and an improved iron expanding horse hoe, price 4*l.* 4s., all invented, proved, and manufactured by the exhibiter.

ROBEY AND CO., Engineers, of Lincoln.

A seven-horse patent portable steam engine, price 220*l.* (received the prize of £10 at the North Lincolnshire agricultural meeting at Market Rasen in 1856), an eight-horse patent portable steam engine, price 235*l.*, an eight-horse power horizontal fixed steam engine, price 200*l.*, a combined portable thrashing, straw-shaking, winnowing, chaff separating, barley awning, smutting and caping machine, price on travelling wheels 120*l.* (received the prize of £10 at the North Lincolnshire Agricultural Society's meeting at Market Rasen in 1856, and a combined portable thrashing, straw shaking, winnowing, chaff separating, barley awning, smutting and caping machine, price 120*l.*, all invented, improved, and manufactured by the exhibiters.——N.B.—Two-and-a-half discount for cash after trial.

JOHN FOWLER, jun., of 28, Cornhill, London, E. C.

(New implement) two steam ploughs of twelve-horse power, price 825*l.*, (new implement) two seven-horse power steam ploughs, single cylinder engine, price 600*l.*, (new implement) a Cotgreave's plough for steam power, price 85*l.*, and (new implement) a ten-horse power double cylinder portable engine, price 360*l.*, all improved by the exhibiter, and manufactured by Ransomes and Sims, of Ipswich.

T. F. GRIFFITHS & CO., of 68, Bradford-street, Birmingham, Warwickshire.

(New implement) a Keevil's patent cheesemaking apparatus, price, holding 90 gallons, tin 25*l.* (received the silver medal of the Royal Agricultural Society of England at Chelmsford, 1856); (new implement) a Keevil's patent cheesemaking apparatus, price, holding 136 gals., 32*l.*; and (new implement) a milk sieve, price 7s. 6d., all invented by Richard Keevil, of Laycock, and manufactured by the exhibiters; whey funnel, price 4s.; a yoke bucket holding 9 gals., price 9s.; a milking pail holding 7 gals., price 7s.; and milking pail holding 14 quarts, price 4s., all manufactured by the exhibiters.

RICHARD REID, of 35, Regent-circus, Piccadilly, London.

A patent agricultural fire engine, price 18*l.* 18s. (a silver medal was awarded for this engine at Exeter, July, 1850); a patent watering engine, price 7*l.* 10s., invented, improved, and manufactured by the exhibiter; a smaller one, price 6*l.* 6s.; and (small size) on 4 wheels, 5*l.* 5s.; a patent injecting instrument, for horses, cattle, &c., price 2*l.* 10s., invented by the late John Read, improved and manufactured by the exhibiter (highly commended by the judges at the Lewes meeting, 1852, and at Gloucester, 1853); a hollow probang for relieving hoven or choked cattle, &c., price 1*l.* 10s., a smaller size, price 1*l.* 1s., invented, improved, and manufactured by the exhibiter; a hollow probang for relieving hoven or choked calves, sheep, &c., price 10s.; a patent hand watering machine, price 2*l.* 12s. 6d. (highly commended by the judges at Lewes, 1852); a patent double action greenhouse pump, price 4*ls.* 10s. (highly commended at Gloucester, 1852); a patent single action greenhouse pump, price 3*l.* 10s., and a patent greenhouse syringe, price 1*l.* 10s., all invented, improved, and manufactured by the exhibiter; a horticultural tobacco fumigator, price 1*l.* 1s., invented by Captain Brown.

THOMAS WHEELER, Engineer, Albion Works, Oxford.

A Moody's root grater (Nos. 1, 2, 3, and 4), price 4*l.* 4s., invented by Moody, improved and manufactured by the exhibiter; a single and double action turnip cutter, price, single action 4*l.* 4s., double 5*l.* 5s., invented by Gardner, of Banbury, manufactured by the exhibiter; a bean mill, price 2*l.* 15s., invented and manufactured by the exhibiter; French mill stones, price 24*l.* per pair; a mill stone prover and case, price 2*l.* 15s.; cast steel mill bills, price, cast steel, 1s. per lb., silver steel, 1s. 1d. per lb., manufactured by the exhibiter; a circular-saw bench, price 15*l.*, invented and manufactured by the exhibiter; a seed distributor and drill combined, price 5*l.* 5s., the latter invented and manufactured by the exhibiter; screw jack, price 2*l.* 2s., and locust mill, price 3*l.* 10s., invented and manufactured by the exhibiter; a counter shaft corn crusher, price 5*l.* 10s.; an eight horse horizontal high pressure steam engine, price 195*l*, manufactured by the exhibiter; garden seats, price, plain seat 4s. 6d., with back 8s. 6d., with back and elbows 15s. 6d.

BURNEY AND BELLAMY, Mill Wall, London.

A wrought iron air tight cilo, for corn or malt, with registered delivery spout, price, 50 qrs. capacity, 22*l.* 10s., invented and manufactured by the exhibiters; wrought iron cistern for house or farm purposes, price 3d. to 5d. per gallon, according to shape, improved and manufactured by the exhibiters; an oil tank, with strong brass tap, price 2*l.* 2s., improved and manufactured by the exhibiters; (new implement) wrought iron cattle trough, price 2*l.*, (new implement) galvanized iron cattle trough, price, capacity 50 gallons, 1*l.* 5s., and (new implement) a galvanized iron pump trough, price 16s., all invented and manufactured by the exhibiters. N.B.—Carriage extra charged on all the above.

HENRY CLAYTON, of Atlas Works, Upper Park-place, Dorset-square, London.

A Clayton's patent (No. A) combined clay-preparing and brickmaking machine, price at the manufactory 150*l*, fitted with two dies (of any size, to order), the cutting frames and accessories, with gearing, including patent license right of use (this implement received the gold medal at the Vienna Exhibition, May, 1857, the prize of the Royal Agricultural Society at Chelmsford, 1856, the gold medal of honour at the Paris exhibition, 1855, and the gold medal of the exhibition at Amsterdam; a patent (No. B) combined clay-preparing and brickmaking machine, price at the manufactory 120*l.*, fitted as before, &c.; a patent (No. C) combined clay-preparing and brickmaking machine, price at the manufactory 110*l.*, fitted as before, &c.; a patent (No. D) clay-preparing and brick and tilemaking machine, price at the manufactory 100*l.*, fitted as before, &c.; a patent (No. E) brickmaking and tile and pipe machine, price at the manufactory, 60*l.*, all invented and manufactured by the exhibiter; an improved clay-crushing roller mill, price at the manufactory 65*l.*, including its wheel and pulley gearing complete to fix; a patent brick-pressing machine, price 17*l.*, both invented, improved, and manufactured by the exhibiter; a patent paving tile or quarry pressing machine, price complete for 6-inch square 17*l.*, ditto 9-inch square 19*l.*, ditto 12-inch 21*l.*, invented and manufactured by the exhibiter; a patent (No. 1) double action tile, pipe, and tubular brick machine, price of single action 25*l.* (awarded the prize of 20*l.* by the Royal Agricultural Society at the Exeter Show meeting, the prize medal of the Great Exhibition of London, in addition to thirteen prizes by influential agricultural societies throughout the kingdom), invented, improved, and manufactured by the exhibiter; a patent (No. X) vertical action sanitary or sewage pipe and tile machine, price 60*l.*, invented and manufactured by the exhibiter; an improved (No. 3) double action horizontal tile, pipe, and brick machine, price 28*l.* complete, with an improved receiving table and cutting apparatus; an improved (No. 4) single chamber horizontal tile, pipe, and brick machine, price 21*l.* complete, with an improved receiving table and cutting apparatus; machines of smaller dimensions, price 4*l.* 10s., exclusive of dies, &c.; a (No. 6) bi-chambered horizontal action tile, pipe, and brick machine, price 40*l.*, all invented, improved, and manufactured by the exhibiter (awarded a gold medal and special prize diploma by H. M. The King of Hanover); (new implement) the eagle patent combined reaping and mowing machine, with automatic delivery, price 35*l.* complete, invented by J. H. Caryl, of Sandusky, Ohio, and manufactured by Nurse, Mason, and Co., of Boston, Massachusetts, United States (awarded the prize of 200*l.* at the Massachusetts Agricultural Exhibition, 1856, also the prize of silver plate at the Indiana State Exhibition, 1856).

John Eaton, of Twywell Works, near Thrapston, Northamptonshire.

(New implement) a patent setting-out machine for turnips, wurtzel, &c., with or without hoes combined, price 3*l.* 10s.; with four hoes and frame combined, 4*l.* 4s., and (new implement) a patent setting-out machine for turnips, wurtzel, &c., with or without hoes combined, price 5*l.*, with six hoes and frame combined 6*l.*, invented and manufactured by the exhibiter; a one horse cart with harvest raves complete, price, without raves 10*l.* 5s., with raves as exhibited 11*l.*, improved and manufactured by the exhibiter (a prize of 6*l.* was awarded by the Royal Agricultural Society held at York in 1848); a registered sheep crib, price 1*l.* 2s. 6d., if four are taken 4*l.* 4s., invented by Wm. Wright, Esq., of Titchmarsh, improved and manufactured by the exhibiter; a corn dressing machine, price, with seven riddles and one screen 8*l.* 10s., for clover purposes a blank screen and fine riddle required, extra 10s., invented, improved, and manufactured by the exhibiter; a lifting jack, price 3*l.* 5s., improved and manufactured by the exhibiter (a card of commendation was awarded by the Royal Agricultural Society, held at Lincoln, 1854), a smaller size, price 3*l.*; an engine jack, price 1*l.* 10s., and a smaller size, price 1*l.* 1s., improved and manufactured by the exhibiter; a hand seed dibble, price 15s., invented and manufactured by the exhibiter.

E. A. Ferryman, of Wadenhoe, near Oundle, Northamptonshire.

Two sizes of (new implement) a patented self-kneading lever churn, price 3*l.* and 1*l.* 10s., invented by the exhibiter, and manufactured by J. Gann, of Oundle.

William Langford Fisher, of Thrapston, Northamptonshire.

A patent horse rake, price 7*l.* 10s. (it took the prize at the Cork Agricultural Show, 1856, also a special prize at the Manchester and Liverpool Agricultural Society's show at Wigan, August, 1856); an improved ten rowed steerage corn drill, price 21*l.*; an improved five rowed steerage corn drill, prices, corn drill 12*l.*, rollers for turnip and mangel wurzel 3*l.* extra; an improved two-row ridged drill, price 15*l.*; an improved chaff machine (No. 1 A), price 5*l.* 10s.; an improved chaff machine (No. 1), price 7*l.* 10s.; an improved chaff machine (No. 2), price, if on a wrought-iron frame, 10*l.* 10s., on wood frame 10*l.*; an improved chaff engine (No. 3), price 14*l.*; an improved cake mill, price 3*l.* 5s.; a combined bean and cake mill, price 4*l.* 15s. (a silver medal was awarded to this mill as a special prize by the North Lancashire Society's show at Preston, Aug., 1856); a combined bean, oat cake, and barley mill, price 7*l.* 10s.; an improved double cake mill, price 5*l.* 10s.; an improved bean mill, price 2*l.* 10s.; an improved one horse power, price 12*l.*, and a patent clod crusher or roller, price 12*l.* All the above are invented and improved by Nathaniel Smith, of Thrapston, and manufactured by the exhibiter. The last roller was highly commended by the judges at the Royal Agricultural Society's show at Chelmsford, 1856; also received a special prize at the Manchester and Liverpool Agricultural Show at Wigan, 1856.

Wallis and Haslam, Basingstoke, Hants.

A fifteen row corn drill, price 28*l.* 10s., if with extra barrel 30*l.*; a thirteen row corn drill, price 26*l.* 10s.; a seven row turnip or mangel and manure drill, price 28*l.*; a three row turnip or mangel and manure drill, price 17*l.* 10s.; a one row iron horse hoe for turnips, &c., price 2*l.*; a one row horse hoe with swing steerage, price 2*l.* 8s.; a one or two row horse hoe, price 2*l.* 15s., and a horse hoe, price 2*l.* 5s.: all these are invented, improved, and manufactured by W. Busby, of Bedale; a horse hoe with swing steerage, price 7*l.*, invented, improved, and manufactured by W. Smith, of Kettering; a patent machine for drilling iron by hand or other power, price 5*l.* 5s., without frame 3*l.* 15s.; a one horse cart with cranked axle, price 13*l.*; an improved one horse power gear work for chaff-cutting, &c., price 10*l.*; an improved two horse power patent portable thrashing machine, price 36*l.*; a three horse power patent thrashing machine, if made portable 5*l.* 10s. extra, price 37*l.*; and a portable four horse power bolting and thrashing machine, price 52*l.* 10s., all invented, improved, and manufactured by the exhibiters; a Boby's patent winnowing machine, price 15*l.*, invented by Boby and Bridgeman, of Bury St. Edmunds, and improved and manufactured by the exhibiters; a double blast winnowing machine, price 14*l.*, manufactured by the exhibiters; two sizes of a patent corn screen, with and without blower, price 12*l.* and 9*l.*; and a patent barley or corn screen, price 7*l.*, invented by Boby and Bridgeman, of Bury St. Edmunds, and improved and manufactured by the exhibiters; a corn blower, price 3*l.* 12s.; a corn blower (large size), price 4*l.* 12s.; a corn dressing machine with blower, price 5*l.*, larger size 5*l.* 12s. 6d.; a barley hummeller for hand power, price 4*l.* 10s.; an oilcake crusher or breaker, price 4*l.*; and an oat, malt, and linseed crushing mill, price 5*l.*, invented, improved, and manufactured by the exhibiters; a prize roller mill for crushing oats, linseed, malt, and beans, price 10*l.* 10s., without bean plates 8*l.*, invented, improved, and manufactured by Messrs. Turner, of Ipswich (it has obtained several prizes from the Royal Agricultural Society of England); a bean mill with standard frame, price 2*l.* 17s. 6d., invented and manufactured by the exhibiters; a chaff cutter for hand power, price 3*l.*, invented, improved, and manufactured by the exhibiters; two sizes of a chaff cutter with self feeding rollers, price 7*l.* and 3*l.* 15s., invented, improved, and manufactured by Richmond and Chandler, of Salford (the prize of the Royal Agricultural Society of England was given to this machine at Carlisle); a chaff cutter for horse or steam power, price 12*l.*; a set of machinery for deep wells, with cistern and self acting tipping apparatus, price without the cistern and tipping apparatus 15*l.*, with two buckets 19*l.* 10s.; a grass and clover seed machine, price 3*l.*; a field roller with three cylinders, price 9*l.* 10s.; and a field roller with two cylinders, price 7*l.* 17s. 6d., invented, improved, and manufactured by the exhibiters; two sizes of a registered wheel roller and clod crusher, price 17*l.* 2s. and 14*l.* 5*l.*, invented by C. Haslam, of Basingstoke, and improved and manufactured by the exhibiters (this implement obtained the commendation of the Royal Agricultural Society of England at Chelmsford); Cambridge's patent roller or clod crusher, price 13*l.* 6s., invented by W. Cambridge, of Lavington, and improved and manufactured by the exhibiters; a patent roller or clod crusher, price 17*l.* 2s., invented by W. Cambridge, of Bristol, and improved and manufactured by the exhibiters; a two wheel land presser, price 6*l.*; a three wheel land presser, price 8*l.*; a pony plough, marked B F, price 2*l.*, with round coulter 2*l.* 3s.; a small two horse iron plough with two wheels, marked W H, price 3*l.* 5s.; a one wheel iron plough, marked S C, price with steel turnfurrow 4*l.*, with iron turnfurrow 3*l.* 12s. 6d.; a two wheel iron plough, marked S C, price as exhibited 4*l.* 12s. 6d., with iron turnfurrow 4*l.*; a two wheel iron plough with screw headgear, marked S C, price 4*l.* 13s. 6d.; a two wheel iron plough with screw headgear, marked A Z, price 4*l.* 13s. 6d., with iron turnfurrow 4*l.* 6s.; a two wheel iron plough with fixed wheels, marked B, price 4*l.*, with steel turnfurrow 4*l.* 7s. 6d.; a two wheel Hampshire plough with wood beam and handles, marked B 8, price 3*l.* 9s. 6d., all invented, improved, and manufactured by the exhibiters; a set of patent iron harrows, price 3*l.*; and a set of patent four beam diagonal iron harrows, price 4*l.*, invented by L. Taylor, of Cotton End, and improved and manufactured by the exhibiters (several prizes have been awarded for these by the Royal Agricultural Society of England); a set of drag harrows, price 4*l.* 15s.; an iron lever cultivator or broadshare, price 6*l.* 4s.; a horse or cattle water trough, price 2*l.* 8s.; and an iron pig trough, price 8s., invented, improved, and manufactured by the exhibiters; a registered rotary screening machine for ashes and artificial manures, price 5*l.* 5s., invented by R. Smith, of Exeter, and improved and manufactured by the exhibiters.

JOSEPH GRIPPER, of Colchester, Essex.

A wrought iron sheep or cattle trough on wheels, price 1*l.* 6s. 6d., and a wrought iron trough on wheels, price 1*l.* 4s., invented, improved, and manufactured by the exhibiter; a wrought iron hay crib or rack for cattle and horses, price 1*l.* 12s.; a bundle of wood hand drag rakes with iron teeth, price 10s. 6d. each; a bundle of wood hand drag rakes with iron teeth, 5 feet 6 inches wide, price 12s. each; and a bundle of wood hand drag rakes with iron teeth, 6 feet wide, price 13s. 6d. each, manufactured by the exhibiter; a bundle of twitch or stubble rakes with iron teeth, price 2s. each, invented and manufactured by the exhibiter; a wrought iron sack barrow, price 12s. 6d., manufactured by the exhibiter; a wrought iron carriage jack, price 9s. 6d. (can be used for high or the very lowest wheels); several bundles of wrought iron skeps or baskets, from 2s. 3d. each, improved and manufactured by the exhibiter; strong wrought iron jets or ladles for manure, &c., price from 3s. 9d., with turned ash shaft 4s. 6d. upwards, manufactured by the exhibiter; a copper jet or ladle for brewing, &c., price 10s., with strong ash shaft 11s.; a bundle of wrought iron water pails, price No. 1, 3 gallons 2s. 6d., No. 2, $3\frac{3}{4}$ galls. 2s. 9d., No. 3, $4\frac{1}{2}$ galls. 3s. 3d. each, all improved and manufactured by the exhibiter; a barley roller or aveller, price 16s. 6d., with strong shaft 17s. 6d.; a circular wrought iron corn bin, price 16s. 6d., large size 18s. 6d.; a square wrought iron corn bin, price 1*l.* 7s. 6d., improved and manufactured by the exhibiter; a wood corn bushel and strike, price 16s. 6d.; a best wood corn bushel with iron rim at top, and strike, price 1*l.* 1s.; a best wood corn bushel and strike, price 1*l.* 10s.; a best wood coal bushel, price 1*l.* 10s.; and a set of wood measures, price 5s. 6d. the set, all manufactured by Lee, of Bury; two caven sieves for sifting corn before dressing, price 30 in. diameter, $\frac{1}{2}$ in. mesh 10s, 33 in. ditto, $\frac{1}{2}$ in. mesh, 11s. 6d. each (may be had in any size in the mesh); a waterproof cart cover, price 2*l.* 8s., larger size 2*l.* 16s., invented, improved, and manufactured by C. Mackintosh and Co., of London; a bundle of rope belly bands, price 1s. 8d. each, with swivel 2s.; and an improved bullock shackle, price 2s. 6d., improved and manufactured by the exhibiter; an assortment of sheep bells, price, $2\frac{1}{2}$ in. 1s., 3 in. 1s. 2d., $3\frac{1}{2}$ in. 1s. 4d., 4 in. 1s. 6d., $4\frac{1}{2}$ in. 1s. 9d. each, straps 1s. each; a dock drawer or spud, price 3s. 9d.; and an ornamental scroll weathercock with arrow head, price 1*l.* 18s. 6d., manufactured by the exhibiter; a portable furnace with wrought iron case for boiling tar, &c., price 1*l.* 15s., invented and manufactured by the exhibiter; a strong wrought iron garden chair, price 4 feet long 18s. 6d., 6 feet long, 1*l.* 7s. 6d., manufactured by the exhibiter; a wrought iron folding garden stool with galvanized seat, price 4s. 6d., large size 8s. 6d., manufactured by Barnard & Co., of Norwich; a strong wood stable pail, price 3s. 9d.; a horse singeing lamp for burning naphtha, price 3s. 9d., large size 5s. 6d.; a gas singeing lamp with 8 feet of flexible tube, to attach to any gas burner, price 16s. 6d.

WILLIAM SAWNEY, of Beverley, Yorkshire.

A corn dressing machine and blower combined, price 11*l.* 11s., and a corn dressing machine, price 8*l.* 15s., improved and manufactured by the exhibiter; a corn dressing machine, price 7*l.* 10s., manufactured by the exhibiter; a corn blowing machine, price 7*l.*, invented, improved, and manufactured by the exhibiter; (new implement) a registered cliver apparatus, price 3*l.* 15s., invented and manufactured by the exhibiter.

SAMUEL GARN, of Sevenhampton, near Highworth, Wiltshire.

A Berkshire waggon, price 30*l.*, improved and manufactured by the exhibiter; a one horse cart, price with harvest frame 13*l.* 13s., without frame 12*l.* 12s.; a Scotch cart, price 14*l.* 14s., without frame 13*l.* 10s.; and a patent tipping apparatus for cart, price 1*l.* 15s., invented and manufactured by the exhibiters.

SAMUEL NYE, of 79, Wardour-street, Soho, London.

Three sizes of a mincing machine, price 3*l.* 3s., 2*l.* 2s., and 1*l.* 10s.; a patent domestic coffee mill, price 10s., and an improved chaff machine, price 4*l.* 4s., all invented, improved, and manufactured by the exhibiter.

RICHARD GARRETT and SONS, of Leiston Works, Saxmundham, Suffolk.

A patent combined general purpose drill and broadcast manure distributor, price complete with double jointed levers for rough manures and 11 corn levers and tins 51*l.* 10s., invented by Mr. Thomas Chambers, jun., and the exhibiters, improved and manufactured by the exhibiters (the following prizes have been awarded to this implement: 10*l.* at Liverpool, 1841, 30*l.* at Derby, 1843, 20*l.* and a medal at Southampton, 1844, 15*l.* at Northampton, 1847, 10*l.* at Exeter, 1850, medal at the Great Exhibition, 1851, 10*l.* at Gloucester, 1853, and 10*l.* at Carlisle, 1855, amounting together to 105*l.* and two medals); an improved fore-carriage steerage, price 4*l.* 10s., invented, improved, and manufactured by the exhibiters; a patent combined seed and manure drill and broadcast manure distributor, price 26*l.* 5s., with patent barrel for distributing artificial manures broadcast 4*l.* 10s. extra, invented by Thomas Chambers, jun., and the exhibiters, improved and manufactured by the exhibiters (the following prizes have been awarded to this drill: 10*l.* at Cambridge, 1840, 10*l.* at Northampton, 1847, 10*l.* at York, 1848, 10*l.* at Gloucester, 1853, 5*l.* at Carlisle, 1855, and the great council medal of the Great Exhibition, 1851); an improved drill for seed manures on the ridge, price complete with concave and hind rolls and improved seed conductors 24*l.* 7s. 6d., improved and manufactured by the exhibiters (the following prizes have been awarded to this implement: 20*l.* at Bristol, 1842, 10*l.* at Northampton, 1847, and 10*l.* at Norwich, 1849); a three-row economic seed and manure drill, price 14*l.*, invented, improved, and manufactured by the exhibiters (the following prizes have been awarded to this drill: 5*l.* at Lewes, 1852, 5*l.* at Gloucester, 1855, and 5*l.* at Lincoln, 1854); three sizes of an improved Suffolk prize lever corn and seed drill, price with 13 levers complete 29*l.* 15s., if fitted with fore-steerage 4*l.* 10s. extra, next size complete with 11 levers 27*l.*, extra for fore-steerage 4*l.* 10s., and the next size with 8 levers complete 22*l.* 15s., extra for swing steerage 2*l.* 10s., all improved and manufactured by the exhibiters (the prize of 10*l.* was awarded for this drill at Norwich, 1849); two sizes of an improved Exeter prize lever corn and seed drill, price complete with 8 levers 18*l.* 5s., next size complete for 11 rows 22*l.*, invented, improved, and manufactured by the exhibiters (prizes were awarded for this drill at Exeter, 1850, 10*l.*, and Lewes, 1852, 5*l.*); a patent combined seed and liquid manure drop drill, price complete for 2 rows 31*l.*, if fitted with swing steerage 2*l.* 10s. extra, invented by Mr. Spooner, of Eling, and Mr. T. Chambers, jun., of Colkirk Hall, improved and manufactured by the exhibiters (a special prize of 5*l.* was awarded for this drill at Chelmsford, 1856); a Chambers' patent broadcast manure distributor, price 21*l.*, invented by Mr. T. Chambers, jun., of Colkirk Hall, improved and manufactured by the exhibiters (prizes were awarded for this machine at the Lincoln meeting, 1854, where it was first brought out, and at the Carlisle meeting, 1855); two sizes of a patent horse hoe, price 19*l.*, and next size 16*l.*, invented, improved, and manufactured by the exhibiters (this well known implement has received thirteen prizes, being the whole number offered by the Royal Agricultural Society, five medals, and 60*l.* in money); a broadcast seed sowing engine, price 4*l.* 10s., improved and manufactured by the exhibiters; a patent revolving horse hoe for thinning turnips on flat or ridge land, price 12*l.*, invented by Mr. J. Martin, of Barmer, Fakenham, improved and manufactured by the exhibiters (received a prize medal at Gloucester, 1853); a patent revolving horse hoe and turnip thinner for one row on ridge or flat, price 7*l.*, if fitted with hoes to hoe the whole surface of the land for both flat and ridge work 1*l.* extra, improved and manufactured by the exhibiters (the following prizes have been awarded to this machine: 5*l.* at Liverpool, 1841, 5*l.* at Lincoln, 1854, and 5*l.* at Carlisle, 1855); a patent combined clod crusher and roller, price 19*l.* 5s., invented by John Paterson, of Beverley, improved and manufactured by the exhibiters (the prize of 3*l.* was awarded for this implement at the Chelmsford meeting, 1856); an eight-horse power portable steam engine, price with all fittings complete fit for work 245*l.*, improved and manufactured by the exhibiters (the prize of 50*l.* at the Norwich Show, 1849, and the great council medal of the Great Exhibition of 1851, were awarded for this engine, and it has received the commendations of the judges at every subsequent meeting); a portable combined thrashing and finishing dressing machine for steam power, price complete fit for use 120*l*., invented, improved, and manufactured by the exhibiters (received the prize of the Society of 20*l*. at Lewes, 1852, medal at Lincoln, 1854, medal at Carlisle, 1855, and the great council medal of the Great Exhibition of 1851); a seven-horse power portable steam engine, price complete for work 235*l*., improved and manufactured by the exhibiters (received the prize of 50*l*. at the Norwich show, 1849, the great council medal of the Great Exhibition, 1851, and the high commendation of the judges at every subsequent meeting); a portable combined machine for steam power, price complete fit for work 104*l*., invented, improved, and manufactured by the exhibiters (received the Society's prize of 20*l*. at Lewes, 1852, medal at Lincoln, 1854, medal at Carlisle, 1855, and the great council medal of the Great Exhibition, 1851); a six-horse power portable steam engine, price complete fit for work 220*l*., if fitted with patent fire box 2*l*. per horse power extra, improved and manufactured by the exhibiters (the prize of 50*l*. was awarded for the engine at Norwich, 1849, also the great council medal of the Great Exhibition of 1851, and commendations of the judges at every subsequent meeting); a portable combined machine for steam power, price complete fit for work 66*l*., invented, improved, and manufactured by the exhibiter (received the prize of 20*l*. at the Lewes meeting, 1852, a medal at Lincoln, 1854, a medal at Carlisle, 1855, and the great council medal at the Great Exhibition, 1851); a five-horse power portable steam engine, price complete fit for work 200*l*., if fitted with patent corrugated fire-box 2*l*. per horse power extra, improved and manufactured by the exhibiters (the Society's prize of 50*l*. was awarded for this engine at Norwich, 1849, also the great council medal of the Great Exhibition, 1851, and the commendations of the judges at every subsequent meeting); a portable combined machine for steam power, price complete fit for work 63*l*., improved and manufactured by the exhibiters (received a prize of 20*l*. at the Lewes meeting, 1852, a medal at Lincoln, 1854, a medal at Carlisle, 1855, and the great council medal of the Great Exhibition of 1851); a four-horse power bolting thrashing machine, price complete as a fixture 59*l*., if with travelling wheels, lever purchase, and chain for loading and unloading, 8*l*. extra, invented, improved, and manufactured by the exhibiters (received a prize of 25*l*. at the Newcastle meeting, 1846, 20*l*. at Northampton, 1847, and 20*l*. at York, 1848); a two-horse power thrashing machine, price with travelling wheels complete 40*l*., without travelling wheels 35*l*., invented, improved, and manufactured by the exhibiters (the prize of 10*l*. was awarded for this machine at Lewes, 1852); an improved corn dressing machine, price 12*l*., improved and manufactured by the exhibiters; a No. 51 D improved corn dressing machine, price 8*l*. 10s., invented, improved and manufactured by the exhibiters; an improved corn dressing machine for hand power, price 6*l*. 5s.; a barley aveller or hummelling machine, price 5*l*. 10s.; an improved chaff cutter for steam power, price complete with heavy fly-wheel and four knives 16*l*. 16s.; an improved chaff cutter for horse power, price 11*l*.; an improved chaff cutter for hand power, price 7*l*.; a linseed, malt, oat, beans, peas, and barley mill, price 7*l*. 10s., if with additional barrels and plates for grinding beans, peas, or barley, 3*l*. 10s. extra, and an improved rape and linseed cake crusher, price 7*l*. 7s., all improved and manufactured by the exhibiters; an improved double action turnip cutter, price 5*l*. 10s., if made with wheels and handles 10s. extra, invented by the late James Gardner, of Banbury, improved and manufactured by the exhibiters; an improved hand power root pulping machine, price 5*l*. 10s., invented, improved, and manufactured by the exhibiters; an eight-horse power fixed steam engine, price complete 210*l*., improved and manufactured by the exhibiters; a complete apparatus for preparing all kinds of grain for market in one operation, price for the whole apparatus complete 147*l*., invented, improved, and manufactured by the exhibiters (received a prize medal at Gloucester, 1853, and at Carlisle, 1855); an improved stone grinding mill, price complete with driving pulleys 54*l*.; an improved chaff cutter for steam power, price complete with heavy fly-wheel and four knives 17*l*. 16s.; an improved machine for pulping roots, adapted to steam power, price 10*l*., extra if fitted with driving pulley; an improved linseed and oat crusher, price 18*l*., extra if fitted with driving pulley; an improved rape and linseed cake crusher for steam power, price 11*l*., extra if fitted with driving pulley (a prize of 2*l*. was awarded for this machine at Liverpool, 1841, 5*l*. at Bristol, 1842, and 5*l*. at the three successive meetings at Gloucester, Lincoln, and Carlisle, 1853-54-55); and an eight-horse power portable steam engine, price 245*l*., all improved and manufactured by the exhibiters; a portable combined thrashing and finishing dressing machine for steam power, price 120*l*., invented, improved, and manufactured by the exhibiter.

JOHN JAMES (firm of James and Malcolm), of 115, Leadenhall-street, E.C., London.

A 10-ton patent weigh bridge, platform 10ft. by 6ft. 9in., for waggons, price 72*l*.; a 5-ton ditto, platform 8ft. by 6ft. 9in., for waggons and carts, price 57*l*. 10s.; a 3-ton ditto, platform 6ft. 2in. by 2ft. 4in., for live cattle, carts, &c., price 31*l*. 10s., hurdling for cattle 4*l*. 4s. extra (obtained the Society's prize of 10*l*. at Newcastle, 1846); a 10-cwt. patent weighing machine, price 12*l*., and a 6-cwt. ditto, price 9*l*. 5s., invented and manufactured by the exhibiters (obtained the Society's prize of 5*l*. at Southampton, 1844); a 3-cwt. weighing machine, price 4*l*. 15s., manufactured by the exhibiters; a 1-cwt. weighing machine, price 3*l*. 15s, invented and manufactured by the exhibiters; (new implement) a 3-cwt. crane jib, price 9*l*.; and a set of single, double, and treble sheave blocks, 3-inch iron sheaves, price 2*l*. 4s., brass ditto 2*l*. 10s., manufactured by the exhibiters; a 12-inch screw wrench, price 9s.; and a 14-inch ditto, price 11s., manufactured by James Ferrabee and Co., of Stroud, Gloucestershire.

CHARLES POWELL, of Ticehurst, near Hurstgreen, Sussex.

(New implements) three 5-row patent depositor dibbles or grain planters, price 3*l*. 3s. each; (new implements) three 4-row patent depositor bean dibbles, price 3*l*. 6s. each; (new implements) three sets of "Sigma's" steel "draw sheave" hoes, price 18s. each, invented by "Sigma," and manufactured by the exhibiter; (new implement) a carriage for transplanting trees, price 1*l*. 10s., invented by W. Thomas, Esq., of West Wickham, and manufactured by Edward Noakes, of Lamberhurst, Kent; (new invention) the aphis powder in dredgers, price 2s. 3d. per lb., invented by "Sigma," and manufactured by the exhibiter.

CLAYTON, SHUTTLEWORTH, and Co., of Lincoln.

A 6-horse power outside cylinder portable steam engine, price 210*l*. (received the prize of £25 at the Royal Agricultural Society's meeting held at Norwich, 1849, £25 at Exeter, 1850, and a prize medal at the Great Exhibition, 1851); a 6-horse power patent portable steam engine, price 220*l*. (received the prize of £20 at the Society's meeting held at Gloucester, 1853, also £10 at Carlisle, 1855); a 7-horse power outside cylinder portable steam engine, price 230*l*.; a 7-horse power patent portable steam engine, price 235*l*.; an 8-horse power outside cylinder patent portable steam engine, price 250*l*.; an 8-horse power patent portable steam engine, price 255*l*.; a 10-horse power outside single cylinder portable steam engine, price 290*l*.; a 10-horse power outside double cylinder portable steam engine, price 290*l*.; 6-horse, 8-horse, 10-horse, 12-horse, and 14-horse power fixed steam engines, prices, exclusive of carriage, brickwork, or masonry, but inclusive of fixing, 170*l*., 210*l*., 255*l*., 300*l*., and 340*l*.; a set of fixed barn works, price, including one length of bright shafting, with all necessary pulleys and bearings, but exclusive of carriage and fixing, 150*l*. (obtained silver medal and £10 at the Society's meeting held at Lewes, 1852, a silver medal at Gloucester, 1853, £20 at Lincoln, 1854, and £20 at Carlisle, 1855); a combined portable single-blower thrashing, straw-shaking, riddling, winnowing, chaff-separating, and barley-horning machine, price, including patent drum-beaters, wood wheels, and patent axles, 108*l*. (obtained a prize of £20 at the Society's meeting held at Lewes, 1852, also £20 at Lincoln, 1854); a combined portable thrashing, straw-shaking, riddling, winnowing, chaff-separating, and barley-horning machine, price, including patent drum-beaters, wood wheels, and patent axles, 118*l*.; a ditto, price, &c., 128*l*. (obtained silver medal at the Society's meeting held at Carlisle, 1855); a combined fixed thrashing, straw-shaking, riddling, winnowing, chaff-separating, and barley-horning machine, price, including supporting frame, but exclusive of carriage and fixing, 118*l*. 10s.; a portable mill driven by steam power, price fitted with fast and loose pulleys 52*l*. 10s. (received the prize of £10 at the Society's meeting held at Norwich, 1849, £10 at Exeter, 1850, £10 at Gloucester, 1853, £5 at Lincoln, 1854, and £5 at Carlisle, 1855); a ditto, price 77*l.* 10s.; a portable circular-saw bench, price 18*l.*; and an improved portable circular-saw bench, price 35*l.*: all the above are invented, improved, and manufactured by the exhibiters.

Henry W. Ford, of Gloucester.

(New implement) a steam digger, price 400*l.*, invented by the exhibiter, and manufactured by Barrett, Exall, and Andrewes, of Reading.

John Gifford, of Horsington, near Wincanton, Somersetshire.

(New implement) a waggon, price 30*l.*, manufactured by the exhibiter.

Isaac and Robert Blackburn, of Long Eaton, near Derby.

(New implement) a steam cultivator and traction engine, price 460*l.*, invented by the exhibiters, and manufactured by Isaac Blackburn.

R. and J. Reeves, of Bratton, near Westbury, Wilts.

A patent two-row liquid manure and seed drill, 4½ feet wide, price 23*l.* (the Royal Agricultural Society of England awarded a silver medal to this drill at York, 1848, a prize at Norwich, 1849, a prize at Exeter, 1850, a special prize at Gloucester, 1853; a prize at Lincoln, 1854, and at Carlisle, 1855); (new implement) a patent two or three row drill for liquid and seed, 4½ feet wide, either for ridge or flat, price, with the patent drop levers, 32*l*, without, 26*l.*; a patent four-row drill for liquid and seed, 6 feet wide, price 28*l.* 10s.; and a patent six-row drill for liquid manure and seed, 7½ feet wide, price 37*l.*, all the above are invented by Thomas Chandler, of Aldbourn, Hungerford, improved and manufactured by the exhibiters; a patent two-row liquid manure and seed drill, 4½ feet wide, price 21*l.*; another, the same in principle, fitted with Hornsby's patent vulcanized India-rubber tubes for conducting the seed, price 24*l.* 15s.; (new implement) a patent liquid manure and seed drill, 6 feet wide, price, with patent droppers, 34*l.*, without, 26*l.*; a patent six-row drill for liquid manure and seeds, 7½ feet wide, price 30*l.*; a patent combined liquid manure drill with corn or seeds, price 43*l.*; (new implement) a patent economical drill for dry manure and seeds, price 8*l.*, two others, price 10*l.*, two, price 12*l.*, and one, price 14*l.*, invented and manufactured by the exhibiters; a twelve-row lever corn drill, price 31*l.*, improved and manufactured by the exhibiters; (new implement) a ten-row lever corn and manure drill, price 33*l.*; a three or four-row compost drill, price 20*l.*; (new implement) a patent eight-row drop or continuous drill for corn, price 34*l.*; (new implement) a patent dry manure distributor, price 10*l.*; and (new implement) a patent liquid manure cart or distributor, invented and manufactured by the exhibiters, price 18*l.*; a compound-action clod crusher, price 16*l.*, another price 14*l.*: invented by J. Patterson, of Beverley, and manufactured by the exhibiters; an iron two-wheel plough, price 4*l.* 17s.; an iron one-wheel plough, price 4*l.*; an iron two-wheel plough, price 4*l.* 12s.; an iron plough, price 3*l.* 10s.; a horse hoe, price 5*l.*; a horse hoe, price 2*l.* 5s.; and a paring plough, price 4*l.* 10s., invented and manufactured by the exhibiters; a patent prize cultivator, price 9*l.* 10s., carriage 15s. extra, invented, improved, and manufactured by R. Coleman, of Chelmsford; another size, price 12*l.* 10s., carriage 15s. extra.; a set of patent chain harrows, price 3*l.* 15s., invented by J. Cartwright, of Shrewsbury, and manufactured by Wm. Cambridge, of Bristol; a portable pump for liquid manure, price 5*l.* 5s., invented and manufactured by the exhibiters; a rick cloth with models of poles, price 16*l.*, invented and manufactured by Edward Taylor, of Bradford.

Thomas R. and R. Hunt, of Earl's Colne, near Halsted, Essex.

An improved engine for hulling and dressing clover and trefoil seed, price complete, 45*l.*, invented by the late Mr. Constable, of Cambridge, improved and manufactured by the exhibiters (received the prize at the Bath and West of England Show, 1855, and the Society's silver medal at Carlisle); a corn-dressing machine, price 12*l.*; another, price 8*l.* 8s.; and a horse or steam-power chaff cutter, price 13*l.*, invented, improved, and manufactured by the exhibiters; a horse-power chaff engine, price 7*l.*, invented by Mr. Cornes, of Barbridge, improved and manufactured by the exhibiters; another size, adapted for one man or two boys, price 5*l.* 5s.; a hand-power chaff cutter, price 2*l.* 12s. 6d.; and a one-horse gear, price 10*l.* 10s., invented, improved, and manufactured by the exhibiters; a one-row hand brush drill, price complete, 1*l.* 12s. 6d.; improved and manufactured by the exhibiters; a one-row hand cup drill, price 2*l.* 3s., if with lever, 2s. extra; a two-row hand cup drill, price 3*l.* 10s.; (new implement) a one-row hand drill, for turnips and manure, price 5*l.* 13s. 6d.; and an Essex improved scythe, price 11s. 6d., invented, improved, and manufactured by the exhibiter.

Robert Tinkler, of Penrith, Cumberland.

Eight specimens of a revolving barrel churn, price 3*l.* 15s., 3*l.* 10s., and 3*l.*, invented, improved, and manufactured by the exhibiter; and thirty-six specimens of a wood hay rake, price 1s. 3d. each, improved and manufactured by the exhibiter.

Edward Brown and Son, of Lyme Regis, Dorsetshire.

An improved patent kitchen range, with steam boiler, &c., price 36*l.*, without steaming apparatus, 21*l.*; and an economic cooking apparatus, with roasting apparatus, &c., price 10*l.* 10s., invented by Edward Brown, improved and manufactured by the exhibiters; and an economic portable cattle food steaming apparatus, price 16*l.*, invented, improved, and manufactured by the exhibiters.

Burgess and Key, of 95, Newgate-street, London.

(New implement) a high-pressure locomotive double cylinder engine, price 700*l.*, invented and manufactured by Collinson Hall and Thomas Charlon, of Princess Gate Dairy Farms, Navestock, Essex, fitted with Boydell's endless railway wheels; (new implement) a steam-ploughing machine or cultivator, price 500*l.*, invented, improved, and manufactured by H. H. Fulton and T. B. Etty, engineers, of 8, Great Queen-street, Westminster; five specimens of a reaping machine, price, at the works, 40*l.*, with extra bed, 45*l.*, improved and manufactured by the exhibiters (the Royal Agricultural Society's prize of 30*l.* was awarded in 1855, and 15*l.* in 1856); a mowing machine, price 30*l.*, invented by C. H. M'Cormick, of Chicago, United States, manufactured by the exhibiters; a reaping machine, price 35*l.*, invented by C. H. M'Cormick, of Chicago, United States, improved and manufactured by the exhibiters (the gold medal was awarded in 1851); an American platform beehive, price 3*l.* 10s., invented by Silvester Davis, of Claremont, and manufactured by the exhibiters; a package of adjustable scythes, price 10s. each, invented by Robert Otway, and manufactured by the exhibiters; six sizes of a force and lift pump, or farm fire engine, price, fitted as a fire engine, on wheels, 26*l.* 10s., smaller sizes, price from 17*l.* 5s. to 9*l.*, invented by Kase, of America, improved and manufactured by the exhibiters; a copper lift pump, price, without suction, 4*l.* 4s.; and a galvanized iron pump, price, without suction, 3*l.* 3s., improved and manufactured for the exhibiters; six sizes of a patent American churn, price, to make 12lbs., 2*l.* 10s. 6d., 10lbs., 2*l.* 5s., 8lbs., 2*l.* 2s., 6lbs., 2*l.*, 4lbs., 1*l.* 15s., and to make 3lbs., 1*l.* 10s., invented by C. J. Anthony, of America, improved and manufactured by the exhibiters (has received prizes at all the meetings of the Royal Agricultural Society since its introduction, including the last one at Carlisle, and also at the Great Exhibition, 1851); (new implement) an American horse power, price (delivered at York station), for one horse, 18*l.* 18s., improved and manufactured by J. Hartas, of Wrelton, near Pickering, Yorkshire; a chaff cutter, price 10*l.* 10s., manufactured by the exhibiters; (new implement) a packet of boites à houppes, price 2s. 6d. each, invented and manufactured by Messrs. Ouin and Franc, of Paris; (new implement) a patent cradle washing machine, price 3*l.* 13s. 6d., invented by J. Morris, of Old Kent-road, London, and manufactured by the exhibiters; a hand mowing and rolling machine, price 6*l.* 10s., invented, improved, and manufactured by A. Shanks and Son, of Arbroath; a lawn mowing machine, price 6*l.*, invented by E. Budding, of Dursley, improved and manufactured by B. Samuelson, of Banbury; several sizes and descriptions of steel forks, for agricultural purposes, price from 2s. upwards each fork, invented by Francis Parkes, of Birmingham, improved and manufactured by Messrs. Parkes and Co.; two bundles of steel spades, price from 4s. each upwards; a complete set of draining tools, price 1*l.* 10s. to 1*l.* 15s.; and a bundle of soil testers, price 4s. 6d. each, manufactured by Francis Parkes, of Birmingham; (new implement) a patent steel-pegged mill, price (delivered at York) 12*l.*; and a patent conical turnip cutter, price (delivered at York) 5*l.* 5s., invented and manufactured by J. Hartas, of Wrelton, near Pickering, Yorkshire; a bundle of gutta percha tubing, price 3s. per lb. and upwards, manufactured by the Gutta Percha Company, London; a bundle of canvas hose, price 1s. per yard and upwards; a bundle of gutta percha driving bands, price 2s. 4d. per lb.; a bundle of India-rubber driving bands, price 1s. per foot upwards; a bundle of India-rubber tubing, price 6d. per foot upwards; (new implement) a new pulping machine, price 5*l.* 5s., invented by W. Burgess, of Brentwood, improved and manufactured by the exhibiters; a bundle of garden chairs and seats, price 4s. 6d. upwards, manufactured by Barnard and Bishop; a parcel of jets and unions, price 10s. upwards; and a water carrier, price 4*l.* 4s.

Edwin Allan Athawes, of 63, Blackfriars-road, London.

(New implement) a patent "percolator" fork, price 7s., invented by the exhibiter, and manufactured by Parkes and Co., of Birmingham.

William Tasker and George Fowle, of Waterloo Iron Works, near Andover, Hants.

A drill for general purposes, price including a separate set of corn levers and improved steerage 54*l.*, without steerage 40*l.* 10s.; a corn drill for thirteen rows, price 32*l.*, without steerage 27*l.*; and a turnip and manure drill, price fitted with steerage 33*l.*, without steerage 28*l.* 10s., invented, improved, and manufactured by the exhibiters; a two-row ridge drill, price 24*l.* 10s., improved and manufactured by the exhibiters; a nine-row lever corn and seed drill, price 20*l.*, invented, improved, and manufactured by the exhibiters; a patent liquid manure or water and seed drill, price 29*l.* 10s., if fitted with Chambers' patent drop apparatus 36*l.*, invented by the exhibiters and W. C. Spooner, of Eling, near Southampton, improved and manufactured by the exhibiters; (new implement) a drill for drilling seed with a small quantity of artificial manure, price 13*l.* 10s., improved and manufactured by the exhibiters; a Garrett's patent horse hoe, price 16*l.* 10s., invented, improved, and manufactured by Richard Garrett, of Saxmundham, Suffolk (it has received prizes from the Royal Agricultural Society at twelve of its annual meetings—viz., Liverpool, Bristol, Derby, Southampton, Northampton, York, Norwich, Exeter, Lewes, Gloucester, Lincoln, and Carlisle); an improved steerage horse hoe, price 6*l.* 16s. 6d., manufactured by the exhibiters; a one-row horse hoe, with three steel hoes, price 3*l.* 10s., invented, improved, and manufactured by the exhibiters; a horse hoe, price 3*l.* 5s., without expanding harrow 2*l.* 15s, improved and manufactured by the exhibiters; a horse hoe with five tines, one wheel, and expanding harrow, price 3*l.* 5s., invented, improved, and manufactured by the exhibiters; a horse rake, with steel teeth, price 8*l.* 10s., invented, improved, and manufactured by Howard, of Bedford (has received two first prizes from the Royal Agricultural Society); a horse rake, with iron teeth, price 7*l.* 10s., invented, improved, and manufactured by William Williams, of Bedford (received prizes at the meetings of the Royal Agricultural Society at Southampton and Norwich); a machine for sowing corn broadcast, price 18*l.*, a grass and seed broadcast sowing machine, price 3*l.* 3s., two sizes of an iron plough marked TT, price fitted with two wheels, skim coulter, steel turnfurrow, and patent screwed stumps 5*l.* 18s. and 5*l.* 7s. 6d., and four iron ploughs marked T, price fitted with two wheels, patent screwed stumps, skim coulter, and steel turnfurrow from 4*l.* 10s. to 5*l.* 15s., invented, improved, and manufactured by the exhibiters; an iron plough, price with one wheel and coulter 2*l.* 2s., improved and manufactured by the exhibiters; a plough with two wheels, wooden beam, and handles, price fitted with skim coulter and steel turnfurrow 4*l.*, invented by Tickle, of Southampton, improved and manufactured by the exhibiters; a plough, marked F 1, price 3*l.* 15s., and a plough (D 3), price 3*l.* 12s. 6d, invented, improved, and manufactured by the exhibiters; an improved ridge or double breast plough, price fitted with one wheel 4*l.* 5s., if with marker to gauge the width of ridges 7s. 6d. extra, hoes 10s. extra, improved and manufactured by the exhibiters; a subsoil plough, price fitted with a patent iron beam 5*l.* 5s., invented by the late John Read, of London, improved and manufactured by Stratton, of Bristol (a prize of 10*l.* was awarded to this implement at Southampton 1844, at Shrewsbury 1845, at Newcastle-on-Tyne 1846, at Northampton 1847, and a prize at Chelmsford 1856); a set of iron tube whippletrees, price, complete set for three horses, including middle chain, 1*l.* 5s., improved and manufactured by the exhibiters; an assortment of specimen plough frames, plough wheels, breasts, and ploughshares, invented, improved, and manufactured by the exhibiters; three sizes of a set of four-beam diagonal iron harrows, price 3*l.* 5s., 3*l.* 17s. 6d., and 4*l.* 5s., invented by Laurence Taylor, of Cotton End, and manufactured by the exhibiters; a set of four-beam harrows, with whippletrees, price 4*l.* 5s., invented by W. Armstrong, of Bedford, and manufactured by the exhibiters; a set of iron harrows, price 4*l.* 4s., and a set of iron drag harrows, price 5*l.* 5s., invented, improved, and manufactured by the exhibiters; (new implement) a set of patent chain harrows, price, 7 feet wide, 5*l.* 10s., invented by John Cartwright, of Shrewsbury, and manufactured by William Colbourne Cambridge, of Bristol; four sizes of an iron field roller, price 6*l.* 10s., 11*l.* 5s., 12*l.*, and 17*l.* 7s. 6d., improved and manufactured by the exhibiters; two sizes of a patent roller or clod crusher, price 13*l.* and 19*l.*, and (new implement) a new patent roller or clod crusher, price 18*l.*—the three rollers are invented and improved by William Colbourne Cambridge, of Bristol, and manufactured by the exhibiters; a two-wheel land presser, price fitted with wheels 36 inches diameter 6*l.*, and a three-wheel land presser, price fitted with wheels 36 inches diameter, 9*l.* 15s., invented, improved, and manufactured by the exhibiters; a patent wrought iron drag harrow, or scarifier, price with cast iron frame and side levers 10*l.* 10s., if with wrought iron frame 15*l.*, invented, improved, and manufactured by Richard Coleman, of Chelmsford, Essex (the prize was awarded to this implement at Gloucester, Carlisle, and Chelmsford); a broadshare plough or scarifier, price 7*l.*, and a seven-share cultivator or scarifier, price 11*l.*, improved and manufactured by the exhibiters; three sizes of a Gardner's patent double-action turnip cutter, price 6*l.* 2s. 6d., 5*l.* 15s. 6d., and 5*l.* 4s. 6d., improved by Alexander Samuelson, of Banbury, and manufactured by the exhibiters; a double cake breaker or crushing machine, price 10*l.*, invented, improved, and manufactured by the exhibiters; an oilcake breaker, price 5*l.* 10s., improved and manufactured by the exhibiters; an oilcake breaker, price 3*l.*, invented, improved, and manufactured by the exhibiters; three sizes of a bruising mill, for oats, beans, malt, &c., price 6*l.* 10s., 9*l.*, and 12*l.* 10s., and a bean mill, for breaking beans and peas, price 4*l.* 4s., invented, improved, and manufactured by the exhibiters; a malt mill, with smooth rollers, price 7*l.*, improved and manufactured by the exhibiters; a roller mill, for crushing malt, oats, linseed, &c., price on iron stand 7*l.*, with brackets 5*l.* 15s., invented, improved, and manufactured by Messrs. Turner, of Ipswich; a barley awner, price 5*l.*, improved and manufactured by the exhibiters; a small chaff machine, with two knives, price 3*l.*, invented, improved, and manufactured by W. Williams, of Bedford; a hand power chaff engine, price 7*l.* 17s. 6d., invented, improved, and manufactured by the exhibiters; two sizes of a chaff cutting machine, with two knives, price 14*l.* 10s. and 13*l.*, invented by John Cornes., Sen., of Barbridge, and improved and manufactured by the exhibiters (this machine is the one for which the Royal Agricultural Society has awarded Mr. Cornes a premium nine years in succession, and to which also the prize medal of the Great Exhibition was awarded); also, by the same maker, a chaff cutting machine (No. 5), price with fast-and-loose pulleys 16in. diameter 16*l.*; two sizes of a winnowing machine, price 10*l.* 10s. and 14*l.* 14s., improved and manufactured by the exhibiters; an improved blower, price 4*l.* 4s., invented, improved, and manufactured by the exhibiters; a patent barley screen, price 9*l.* 9s., invented by T. C. Bridgeman, of Bury St. Edmunds, and manufactured by Wallis and Haslem, of Basingstoke; a set of two-horse iron gear work, price as a fixture, including two lengths of shafting, wood levers, and iron cover for spindle, 21*l.* 10s., if made portable on two wheels 5*l.* extra; a hand power thrashing machine, price fitted with three handles, to be worked by three men, 15*l.*; a two horse power portable thrashing machine, price 36*l.* 10s.; a three horse power portable thrashing machine, price

50*l.*; a four horse power portable thrashing machine, price 55*l.*; and a steam power combined thrashing machine, price 98*l.*, invented, improved, and manufactured by the exhibiters; a six horse power outside-cylinder portable steam engine, price 210*l.*, invented, improved, and manufactured by Clayton, Shuttleworth, and Co., of Lincoln (this engine has received a prize of 25*l.* at the Royal Agricultural Society's meeting at Norwich, 25*l.* at Exeter, and a prize medal at the Great Exhibition, 1851); a steam power combined thrashing machine, price 115*l.*, invented, improved, and manufactured by the exhibiters; a seven horse power patent portable steam engine, price 235*l.*, invented, improved, and manufactured by Clayton, Shuttleworth, and Co., of Lincoln); (new implement) an improved portable corn grinding mill, price 50*l.*; and a set of well machinery, for drawing water, price with iron bearings 21*l.*, with brass bearings 21*l.* 10s., best warranted chain 1s. 10d. per yard, invented, improved, and manufactured by the exhibiters (a silver medal was awarded to the exhibiters for this machinery at the Royal Agricultural Society's meeting at Southampton in 1844, and at Lewes in 1852); an improved iron liquid manure cart and pump, price 29*l.* 7s., without pump 22*l.*, invented and improved by William Crosskill, of Beverley, and manufactured by the exhibiters; an iron water trough, price on iron stand 3*l.* 17s. 6d., without stand 3*l.*, and a hand power mill for bruising linseed, price 6*l.* 10s., manufactured by the exhibiters; a set of iron arms and stocks for waggons, price per set of four, size 2¼, 4*l.* 16s.; a set of iron arms and boxes, price per set of four, size 2¼, 3*l.* 6s.; an iron screen, price 3*l.* 17s. 6d.; and two iron plates, used for the floor of malt kilns, price 1s. 8d. per foot, invented, improved, and manufactured by the exhibiters.

JAMES BARTON, of 370, Oxford-street, London.

(New implements) several specimens of sets of patent stable fittings, price from £2 2s. to £6; and three sets of improved loose box fittings, for a corner, &c., price £1 7s. 6d., £2 7s. 6d., and £5, invented, improved, and manufactured by the exhibiter; a No. 5A improved corner manger, 2 feet 6 inches long, price 18s. 6d., improved and manufactured by the exhibiter; a No. 8 enamelled corner manger, price £1 12s., and a 4 feet 4 inches length of stable guttering, price 2s. 6d. per running foot, invented, improved, and manufactured by the exhibiter; a 12 inch square horse pot, trapped with grating plate, price 8s. 6d.; a 4 feet 4 inches length of stable guttering, price 2s. 6d. per running foot; and a tee piece, for stable guttering, price 2s. 6d. per running foot, invented, improved, and manufactured by the exhibiter; a 12 inch enamelled dog trough, price 3s. 9d., a 15 inch enamelled dog trough, price 6s., and a 15 inch galvanized iron poultry trough, price 3s. 3d., manufactured by the exhibiter.

WILLIAM WOOFE, of Weston-Birt, near Tetbury, Gloucestershire.

(New implement) a patent one horse parer, price, for stubble, &c., £5 5s., complete for turf £6 6s., invented by the exhibiter, and manufactured by William Banks, of Weston-Birt, near Tetbury.

HUMPHREY CHAMBERLAIN, of Kempsey, near Worcester.

A patent portable brick-making machine, price, for making perforated bricks £150, for solid bricks £140, invented by the exhibiter, and manufactured by John Jackson, of Worcester (has been exhibited in operation at four agricultural shows, and received four prizes); (new implement) a patent brick-making machine, price £150, with press £175, and a royalty of 1s. per thousand, invented and manufactured by Messrs. Bradley and Craven, of Wakefield (received the silver medal of the Yorkshire Agricultural Society, 1856); a seven horse power portable steam engine, price £220, invented and manufactured by Messrs. William Humphrey and Co., of Hunslet, near Leeds.

EDWARD COCKEY and Sons, of Frome Selwood, Somersetshire.

A patent cheesemaking apparatus, price £24, invented and manufactured by the exhibiters; a patent cheese tub, with loose heating chamber, price £7, invented by the exhibiters, and manufactured by G. Butler, of Frome; a registered heating boiler for general hot water apparatus, price £4 15s. 6d.; a heating boiler, with fire door and fittings, price £10; a double cheese press, price £5 10s.; and a single cheese press, price £3, invented and manufactured by the exhibiters; a curd mill, price £1 15s., manufactured by the exhibiters; a slip curd cutter, price 12s., invented and manufactured by the exhibiters; a force pump, price £8, a lifting pump, price £3, and a cast iron cattle trough, price £1 5s., manufactured by the exhibiters; two sizes of a patent corrugated field roller, clod crusher, or land presser, price £12 and £10 10s., invented and manufactured by the exhibiters; a field roller, price £11 10s., manufactured by the exhibiters; two sizes of a Moody's patent turnip cutter, price £4 5s. and £3 5s., invented by Edmund Moody, of Maiden Bradley, improved and manufactured by the exhibiters; a horse rake, with iron teeth, price £6 15s., a haymaking machine, price £9 10s., and a double action haymaking machine, price £12, manufactured by the exhibiters; a portable forge, price £5, invented and manufactured by Richard Waygood, of London; an iron sack truck, price 16s., manufactured by the exhibiters; six sizes of a chaff cutting machine, price £14, £10 10s., £8, £7, and £6, invented by James Cornes, of Barbridge, and manufactured by the exhibiters; a carriage or cart lifting jack, price 15s., a set of whippletrees, price 12s. 6d., and two sizes of a garden roller, price £3 and £3 10s., manufactured by the exhibiters; a combined corn mill, on iron stand, price £6 10s., invented by Biddell, and manufactured by Ransomes and Sims, of Ipswich; an oat mill, on iron stand, price £4 4s., invented by Biddell, and manufactured by the exhibiters; a combined mill for oats and beans, price £5, manufactured by R. White, of London; a steel oat mill, price £3, manufactured by the exhibiters; a cottage mangle, price £3 15s., and a table mangle, price £2 17s., manufactured by Barnard and Bishop, of Norwich; a crab, price £7, manufactured by the exhibiters; a patent screw jack, price £5 10s., invented and manufactured by Haley, of Manchester; a field gate and post, price £2 10s., manufactured by Main and Co., of Glasgow; a set of stable fittings, price £4 10s., a sack weighing machine, price £2 10s., and a weighing machine, price £3 15s., manufactured by Avery, of Birmingham; an assortment of edge tools, price 1s. 6d. and upwards; an assortment of steel digging forks, price 3s. 6d. and upwards, manufactured by Lyndon, of Birmingham; an assortment of steel hay forks, price 1s. 9d. and upwards, invented and manufactured by Parkes, of Birmingham; an assortment of draining tools, price £1 10s.; and a bundle of steel pitching forks, price 4s. 9d. and upwards, invented and manufactured by Parkes, of Birmingham.

HART, GIBBONS, AND GIBBONS, of Wantage, Berkshire.

A six-horse portable steam engine, price £210, invented and manufactured by William Butlin, of Northampton; a patent portable combined thrashing machine, price £120 (received the prize of £20 at the Royal Agricultural Society's meeting at Gloucester, 1853); an improved liquid manure water cart, price £3 15s.; a Berkshire cultivator, with seven tines, price £10 10s.; and a Berkshire cultivator, with five tines, price £8 15s., invented by Charles Hart, of Wantage, improved and manufactured by the exhibiters.

JAMES AND FREDERICK HOWARD, of Britannia Iron Works, Bedford.

An improved drill presser, price £16, improved and manufactured by the exhibiters; three sizes of an improved horse hoe, price £2 5s., £3, and £3 10s., invented and manufactured by the exhibiters (awarded the first prize by the Royal Agricultural Society of England at Lewes and Gloucester, also highly commended at Carlisle, although no prize was offered); an improved turnip thinner, price £10 10s., invented by exhibiters and Mr. G. W. Baker, of Park Farm, Woburn, and manufactured by the exhibiters; three sizes of a patent horse rake, price £7 10s., £8 10s., and £10 10s. (the two first prizes last offered by the Royal Agricultural Society of England were awarded to this implement); and a patent self-acting horse rake, price £10, invented and manufactured by the exhibiters; an improved Bedfordshire one-horse cart, price £12 12s., if with hind and front ladders or shelvings, 28s. extra; and an improved one-horse cart, price, with harvest shelvings complete, £17, improved by, and manufactured for, the exhibiters; two patent Iron ploughs (marked P P), price £4 12s. 6d., skim coulter and drag chain 7s. 6d. extra each (received the first prize for general purposes, and the first prize for light land, at the Royal Agricultural Society's meeting at Chelmsford, 1856, which with the first prize for deep ploughing at the same meeting, and ten premiums previously awarded to the exhibiters, makes in all thirteen first prizes received by them for the best plough from the Royal Agricultural Society); and two patent iron ploughs) marked P), price £4 7s. 6d., skim coulter and drag chain 7s. 6d. extra, invented and manufactured by the exhibiters; a patent one-wheel iron plough (marked P), price £3 17s. 6d., skim coulter and drag chain 7s. 6d. extra; a patent iron swing plough (marked P), price £3 17s. 6d., extra for slide foot 3s. 6d., ditto for steel breast 7s.; a patent wheel plough with Hampshire gallows (marked P P), price £4 12s. 6d., skim coulter and drag chain 7s. 6d. extra; a patent iron plough (marked P P P), price £6 17s., wheel fixings to alter the depth from the handles 20s. extra, skim coulter and drag chain 8s. 6d. extra (the first prize of the Royal Agricultural Society for the best plough for deep work was awarded to this implement at the Chelmsford meeting, also at the Lincoln meeting in 1854); a patent double furrow plough (marked D O), price £7 7s.; a patent subsoil plough (marked P P), price £3 12s. 6d., if with screwed wheel standards 10s. extra; a patent ridge or double-breast plough (marked P), price £4 10s., if fitted with a pair of hoes 10s. extra; a patent ridge or double-breast plough (marked D B), price £4 10s. (the only prize ever offered by the Royal Agricultural Society of England for ridging ploughs was awarded to the exhibiters for the above implement at the Chelmsford meeting, 1856); a patent ridge or double-breast plough (marked D B), price £4 7s. 6d., if fitted with marker 7s. 6d. extra; a patent dwarf plough (marked D), price £2 5s.; and a patent dwarf plough (marked D D), price £3 3s., if with one wheel £2 15s., all invented and manufactured by the exhibiters; an iron plough sledge, price 12s., manufactured by the exhibiters; a set of improved trussed whippletrees, price 11s. 6d., invented by E. Harding, Esq., improved and manufactured by the exhibiters; a set of improved three-horse equalizing iron tubular whippletrees, price £1 6s., improved and manufactured by the exhibiters; a set of four-horse iron tubular whippletrees, price £2 10s., invented by the Marquis of Tweeddale, improved and manufactured by the exhibiters; a set of four-horse iron tubular whippletrees, price £2 10s., improved and manufactured by the exhibiters; three descriptions of a set of patent jointed harrows, price from £4 16s. to £3 16s., invented and manufactured by the exhibiters (the first prize for the best light harrows, and the first prize for the best general purpose harrows, were awarded to the exhibiters at the Chelmsford meeting, making, with premiums previously awarded by the Royal Agricultural Society of England, nine first prizes for the best harrows); a set of patent two-beam harrows (marked No. 19), price £4 5s.; two sets of patent four-beam harrows (marked Nos. 11 and 12), price £4 4s. and £3 14s.; a set of patent four-beam harrows (marked No. 0), price £3; a set of patent three-beam harrows (marked No. 10), price £4 4s.; three sets of patent drag harrows (marked Nos. 16, 17, and 18), price £5, £6, and £6 10s.; an improved Bedfordshire scarifier or cultivator, price £6, a set of seven steeled triangular shares 31s. 6d. extra, another size scarifier £8 10s., and a larger £9 10s., all invented and manufactured by the exhibiters.

Lord Kinnaird, of Rossie Priory, near Inchture, Perthshire, N. B.

Two specimens of a reaping machine, price £21 10s. and £31 10s.; and a mowing machine, price £20, invented by C. M'Cormick, of the United States, improved by the exhibiter, and manufactured by James Burry, of Knap Works, Inchture.

George Warren, of Maiden Newton, near Dorchester, Dorsetshire.

A thirteen-row lever corn drill, price £28; a winnowing and blowing machine combined, price £11 10s., and another size £12 10s., all manufactured by the exhibiter.

Alfred Crosskill (for the Trustees of W. Crosskill), of Beverley, Yorkshire.

Two improved reaping machines, price £42, manufactured by the exhibiter (received the prize of £20 at the Gloucester meeting of the Royal Agricultural Society of England in 1853, and the first prize of £20 at the Chelmsford meeting in 1856); an improved pair-horse waggon, price £28 10s., with double break £3 extra (received the prize of the R. A. S. for five successive years); and (new implement) a new pair-horse waggon, price £28 10s., both invented and improved by William Crosskill, and manufactured by the exhibiter; an improved pair-horse waggon, price £37, manufactured by the exhibiter; a Newcastle or model one-horse cart, price £14 5s., with shelving £1 10s. extra (received the prize at the Newcastle meeting of the R. A. S. in competition with 42 others), and an improved Newcastle cart, price £13, with raves £2 extra, both invented and improved by Wm. Crosskill, and manufactured by the exhibiter; a light Newcastle cart, price £12, with shelvings £1 10s. extra, improved by Wm. Crosskill, and manufactured by the exhibiter; a York prize cart, price £12 10s., with curved rave £2 extra, invented and improved by William Crosskill, and manufactured by the exhibiter (received the prize at York, in 1853); a light one-horse cart, price £11, improved by William Crosskill, and manufactured by the exhibiter; (new implement) an improved cart, price £18, invented, improved, and manufactured by the exhibiter; an improved (iron) liquid manure cart, price £17, with pump and hose pipe £5 15s. extra (received a medal at the Cambridge meeting of the R. A. S.); an improved iron pump, price, with leather hose like that on the manure cart, £7 7s., with 12ft. of iron pipe and wind bore £4 4s., tripod stand £1 1s., invented and improved by Wm. Crosskill, and manufactured by the exhibiter; several sizes of a pair of patent cart wheels and axles, price from £8 5s. to £6, improved by William Crosskill, and manufactured by the exhibiter (received several silver medals from the R. A. S.); two specimens of a patent clod crusher or serrated roller, price £19 10s., without travelling wheels £17 10s. (received the prize of £20 and silver medal at Southampton, £10 at Shrewsbury, and the special gold medal from the Council after the Newcastle meeting of the Royal Agricultural Society, and was included in the award of the Great Council medal at the Great Exhibition of 1851); and another size, for rolling light land, price £15, or without travelling wheels £13; ten specimens of patent portable farm railway, price, turn-table £5 10s., rails 4s. per yard (received medals from the Royal Agricultural Society at the York, Norwich, and Exeter meetings); and a truck, for patent portable farm railway, price £5 10s., all invented and improved by Wm. Crosskill, and manufactured by the exhibiter; a corn dressing machine, price £9 10s., manufactured by the exhibiter; a six-horse power bone mill, price £85, invented and improved by William Crosskill, and manufactured by the exhibiter; (new implement) an improved bone mill, price £75, invented, improved, and manufactured by the exhibiter; an Archimedian root washer, price £5 10s., invented by Captain Carr, improved by William Crosskill, and manufactured by the exhibiter (received a medal at the York meeting of the Royal Agricultural Society); (new implement) a Romaine's patent steam cultivator, price £600, invented by Robert Romaine, and manufactured by the exhibiter.

Robert Impey, of Street, Somersetshire.

Four sizes of an improved combined winnowing machine and blower, price £14 14s., £13 13s., £13, and £12 10s.; and an improved corn blowing machine, price £8, invented, improved, and manufactured by the exhibiter; and an improved corn blower, price £5, improved and manufactured by the exhibiter.

William Williams, of Bedford.

A patent improved lever horse rake, price £7 10s. (a prize was awarded for this implement at the meeting of the Royal Agricultural Society held at Southampton in 1844, at Norwich in 1846, and at the Royal Agricultural Society of Ireland, held at Dublin, in 1851: the judges also commended it at the Royal Agricultural Society's meeting at Carlisle, in 1855); and an improved three-row horse hoe, price £4 10s., both invented, improved, and manufactured by the exhibiter, six sizes of a set of patent four-beam diagonal iron harrows, price from £2 10s. to £6, invented by Samuel Laurence Taylor, of Cotton End, improved and manufactured by the exhibiter (prizes of £2 and £3 were awarded for these at the Royal Agricultural Society's meeting at Chelmsford, 1856: obtained a prize at the meeting of the Royal Agricultural Society at Derby in 1843, at Southampton in 1844, at Shrewsbury in 1845, at Northampton in 1847, at Norwich in 1849, and at Exeter in 1850; the prize medal was also awarded at the Great Exhibition of 1851, also a prize at Lewes meeting in 1852, and at Gloucester in 1853); a set of three patent four-beam diagonal drag harrows, price £6 10s., invented by Samuel Laurence Taylor, of Cotton End, improved and manufactured by the exhibiter; two four-wheel wrought-iron lever scufflers, price £6 and £7; two sizes of a small two-knife chaff engine, price £2 15s. and £4 10s.; a two-knife chaff engine, price £7 10s., to cut one length £7; a three-knife chaff engine, price £8 8s.; a two-knife chaff engine, price £10, to cut three lengths £10 10s.; and a three-knife chaff engine, price £14 14s., all invented, improved, and manufactured by the exhibiter; a set of improved whippletrees, price 11s. 6d.; and a set of improved equalizing whippletrees, price £1 6s., manufactured by the exhibiter; a draining pipe and tile machine (No. 1), price, with one die and horse, £13 13s. (received a prize of £25 at the Northampton meeting in 1847); and a draining pipe and tile machine (No. 3), price £17 17s., if fitted with die, stage, and cutting-off apparatus for making pan-tiles £3 3s. extra, if ditto for making bricks £4 4s. extra; a combined horse hoe, scarifier, and bouting plough, price £4 10s., if without moulding-plough £3 10s.; a wrought iron plough (marked T S 1), price £4 4s., if with skim coulter 5s. extra; and a double-breasted bouting-plough, price £3 15s., fitted as swing-plough £3 5s., with one wheel £3 10s., with marks to regulate the width of ridges 7s. 6d. extra, with a set of hoes 10s. extra, all invented, improved, and manufactured by the exhibiter.

Henry Cogan, of Trent, near Sherborne, Dorsetshire.

(New implement) a cultivator or scarifier, price £10 10s., invented and manufactured by the exhibiter.

Perreaux and Co., of 39, Mark-lane, London.

Different sizes of a patent India-rubber pump valve, from 2½ to 6 inches, and prices from 8s. to £1 10s. (obtained the 2nd prize at the "Exposition Universelle" 1856, silver medal at the Concours Régional d'Evreux 1857, silver medal at the Exposition de Vienne 1857, large gold medal from the Société d'Encouragement 1857); soupape retenue, price £1; and a three-inch patent pump, price £4, all invented by L. G. Perreaux, of Paris, and manufactured by the exhibiters; a three-inch patent lift and force pump, price £7 10s.; and a patent liquid manure pump, price £3 10s., invented and manufactured by the exhibiters; a French house or garden pump, price £4 10s., invented by L. G. Perreaux, of Paris, and manufactured by the exhibiters; and a force pump, price £12 10s., invented and manufactured by the exhibiters.

Barnard and Bishop, of Norwich, Norfolk.

Several strong wrought iron garden chairs, prices from 8s. 6d. to £2 2s.; an iron garden seat, price 12s. 6d.; wrought iron folding garden stools, price from 4s. to 4s. 6d.; registered iron troughs for poultry, price from 1s. 9d. to 15s.; troughs for dogs, price 2s. 6d. to 3s. 6d.; several rolls of galvanized wire netting, various meshes and gauges for poultry, aviaries, rabbits, sheep, &c., price from 4½d. per lineal yard and 3d. per superficial foot to 11d. per lineal yard; a sample of strained wire fencing, price, for straining posts 37s. each, for fencing, including fixing, 1s. 11d. per lineal yard; and six poultry hurdles, price 5s. 6d. each, all these are invented and manufactured by the exhibiters; a patent sheep fold hurdle, price 16s., wheels 10s., one of which is sufficient for a fold, invented by Henry Gilbert, Esq., of Kensington, Middlesex, and improved and manufactured by the exhibiters; several double Norfolk pig troughs, price from 9s. 6d. to 16s.; and single Norfolk pig troughs, price from 7s. 6d. to £1 7s.; several other descriptions of pig troughs, price from 4s. to £2 5s., all improved or invented by the exhibiters; two sizes of a patent barley hummeller or aveller, price £4 10s. and £5 10s., invented by R. R. Holben, of Barton, Cambridge, improved and manufactured by the exhibiters; two sizes of a patent turnip and root rasping or pulping machine, for cattle or sheep, price £5 and £7, invented and manufactured by the exhibiters; a root grater or turnip cutter, price £4 10s., improved and manufactured by the exhibiters; a root grater, price £3 10s., inventedby Bushe and Barter, of Lismore, Ireland, improved and manufactured by the exhibiters; a Gardner's turnip cutter for sheep, price £4 10s., or mounted on wheels and with handles £5 2s., invented by James Gardner, of Banbury, improved and manufactured by the exhibiters; a patent self-rolling mangle, price £7 7s., invented by Charles Barnard, of Norwich, and manufactured by the exhibiters; a cottage mangle, price £3 10s.; a table mangle, price £2 12s. 6d.; and two sizes of a cast-iron window frame and casement, price 14s. and 18s., invented and manufactured by the exhibiters; a wrought-iron hay-rack or crib, for cattle or horses, price £1 10s., improved and manufactured by the exhibiters; a housemaid's barrow, price £3 10s.; a bundle of Prussian hoes (assorted sizes), price 1s. 6d. to 2s. each; a bundle of horizontal hoes (assorted sizes), price 2s. each; a bundle of drill hoes (assorted sizes), price, No. 1 2s. 6d., No. 2 3s., No. 3 3s. 6d. each; a self-acting fumigator, price 4s. 6d.; a water-cock, of cast iron, price 5s. 6d.; and a water-cock, of cast iron, price 7s. 6d. each, all improved and manufactured by Gidney and Son, of Dereham, Norfolk.

Barrett, Exall, and Andrewes, of Reading, Berkshire.

N.B. All the articles on this stand are invented, improved, and manufactured by the exhibiters, except otherwise mentioned.

A registered hay making machine, price £14 (obtained the prize of the Royal Improvement Society of Ireland at the Dublin meeting, 1851); a patent horse rake for hay, &c., price £17 17s. (received the prize of the Great Yorkshire Society at Sheffield, 1852, also a first-class medal of the Royal Improvement Society of Ireland at Galway); a one-horse cart with harvest frame, price £17; a five-horse power portable steam engine, price £185; a six-horse power portable steam engine, price £210 (obtained the prize medal of the Great Exhibition, 1851, the prize of the Royal Agricultural Society of England at Lewes, 1852, the high commendation of the same Society at Carlisle, 1855, the prize of 400 francs and silver medal at Paris, 1856, the first gold medal at Vienna, 1857); an eight-horse power portable steam engine, price with wood wheels £245; an eight-horse power horizontal fixed steam engine, price, including boiler, necessary connections, and man's time fixing, £208 (received the prize of £10 at the Carlisle meeting, 1855, and spoken of very highly for its simplicity of construction, the first prize of 600 francs and the gold medal at Paris, 1856, and the gold medal at Vienna 1857;) a set of steam-power fixed barn works, price, exclusive of carriage and fixing, £133; a 54-inch steam-power combined portable thrashing machine, price with wooden wheels £96; a three-horse power patent portable thrashing machine and horse gear, price complete to fix £42 19s., with travelling wheels as exhibited £50 2s.; a two-horse power patent portable thrashing machine, price complete to fix £34 4s., with travelling wheels as the one exhibited £40 17s. (received prizes, commendations, and medals from almost every Agricultural Society in England and Ireland, and the prize of 250 francs and the gold medal at Paris, 1856, and the first gold medal at Vienna, 1857); a barley aveller, price £5 (obtained the commendation of the Royal and other Societies); an oilcake breaker for hand power, price £5; a No. 4 oilcake breaker for horse or steam power, price fitted with clip for horse power £12 12s., and fitted for steam as exhibited £13 13s.; a paragon universal grain mill, marked J. C., price £5 10s. (received the prize medal of the Great Exhibition, besides others); a paragon universal grain mill, marked J. F., price £10; a pair of Peak stones for grinding corn by horse or steam power, price £21; various sizes of patent safety chaff cutter for hand, horse, and steam power, price £5 to £15 (highly commended at the meetings of the Royal Agricultural Society at Lincoln and Carlisle), and a registered universal wheel roller and clod crusher, price £17 2s.; a large registered clod crusher, price £16 3s., invented by John Large, Esq., of Ufton, Berks, and manufactured by the exhibiters; an L 2 one-wheel plough, price £3 11s. 6d.; an L 2 one-wheel iron plough, price £4 2s. 6d.; an L 2 two-wheel and swing iron plough, price £4 12s. 6d.; a No 8 two-wheel plough, price £4 2s. 6d.; an universal plough, price £4 10s.; a patent subsoil plough and pulveriser, price £5 10s., invented by Mr. Read, of London, improved and manufactured by the exhibiters, who are the proprietors of the patent (received the prizes of the Royal Agricultural Society of England at Southampton, Shrewsbury, Newcastle, Northampton, York, and Chelmsford); two sizes of patent endless-band saw, price £23 15s. and £76, invented by Mr. Wm. Exall, of Reading, improved and manufactured by the exhibiters.

Charles Burrell, of St. Nicholas Works, near Thetford, Norfolk.

(New implement) a patent locomotive traction engine, or steam horse, price £630, invented by James Boydell, of Camden Works, and manufactured by the exhibiter; (new implement) three specimens of a patent lever double plough, price £10 10s. each; (new implement) a seven-horse power portable steam engine, fitted with Boydell's patent endless railway, price £335, invented, improved, and manufactured by the exhibiter; three specimens of a Cotgreave's patent trenching and subsoil plough, price £10 10s. each, invented by R. Cotgreave, improved and manufactured by Messrs. Ransomes and Sims, of Ipswich (awarded the silver medal at Lincoln, 1854, and at Carlisle 1855); two sizes of a patent combined thrashing, shaking, riddling, and winnowing machine for finishing the corn for market, price £125 and £100 (in 1848, at a meeting of the Royal Agricultural Society at York, a silver medal was awarded); an eight-horse power portable steam engine, price £225, and a seven-horse power portable steam engine, price £235, invented improved, and manufactured by the exhibiter; (new implement) a new portable water tank, fitted with Boydell's patent endless railway, price £150, invented and manufactured by the exhibiter; a patent seed shelling machine, price £48, invented by Kebble Constable, of Cambridge, improved and manufactured by the exhibiter; a circular-saw bench and machine for making hurdles and gates, price £37 10s. (at the Royal Agricultural Society's meeting at Norwich in 1849 a silver medal was awarded), and a strong portable saw bench, price £26, both invented, improved, and manufactured by the exhibiter.

William Brown and Charles N. May, of Devizes, Wilts.

An eight-horse power portable steam engine, price £250, 2½ per cent. discount for cash, invented, improved, and manufactured by the exhibiters; a six-horse power portable steam engine, price £210, 2½ per cent. discount for cash; a four-horse power portable steam engine, price £170, 2½ per cent. discount for cash, and a portable combined thrashing, shaking, riddling, and winnowing machine, price £100, patent beaters £103, manufactured by the exhibiters; a hand power chaff-cutting machine (No. 1), price £4 10s., improved and manufactured by the exhibiters; a chaff-cutter (No. 2), price 6*l.* 10s., and an improved rotary barley screen, price 6*l.*, manufactured by the exhibiters; a patent bean-cutter (No. 1) on iron stand, for hand power, price 4*l.*; a patent steel oat mill (No. 4) on iron stand, price 4*l.*; and a patent combined oat and bean mill (No. 10) on iron stand, price 6*l.* 6s., invented by G. A. Biddell, of Ipswich, and manufactured by Ransomes and Sims; a patent iron-beam broadshare and subsoil plough (marked B. T. B.), price 6*l.* 16s. 6d.; and two sizes of a patent light iron-beam broadshare plough, price 5*l.* 15s. 6d. and 7*l.* 17s. 6d., manufactured by E. H. Bentall, of Heybridge; an improved horse hoe, price 3*l.* 3s., and an improved horse rake, price 7*l.* 15s., manufactured by the exhibiter; an improved winnowing machine, price 14*l*, a Campain's patent elevator, price 8*l.*, and a weighing machine, price 3*l.*, manufactured by Thomas Luck, of Spalding Common, Lincoln; an improved one-horse cart, price 12*l.*, manufactured by the exhibiters; (new implement) a manure distributor, price 9*l.*, invented by Henry Blandford, of Sandridge, Chippenham, and manufactured by the exhibiters; a general-purpose plough, price 5*l.* 2s., manufactured by the exhibiters.

Cottam and Cottam, of St. Pancras Iron Works, Old St. Pancras Road, London.

(New implement) a full sized model of a stall, fitted up to show the patent swing manger, price 3*l.* 10s., invented by Professor Varnell, of the Royal Veterinary College, and manufactured by the exhibiters; a full-sized horse stall and fitments, price 4*l.* 3s.; a full-sized "loose box" with fitments, price, with improved corner manger, rack, and water trough, 3*l.* 15s.; enamelled plates for stall heads, price 3s. 6d. per foot; a board containing harness room fitments, and a board containing stable fitments, various prices; three sizes of a patent iron manger, rack, and water trough, price plain manger, rack, and water trough, with brass plug and washer, 2*l* 12s. 6d. and 3*l* 10s., halter-ball and rein, 10s. extra; a patent iron manger and rack, plain, price 2*l.* 7s. 6d.; ditto enamelled, price 3*l.*; an iron open straight manger, with fittings, price 1*l.* 6s.; an iron, flapped, straight manger with fittings, price 1*l.* 2s.; two sizes of an iron corner manger, with rack, water trough, and fittings, price 2*l.* 15s. and 3*l.* 15s.; an iron corner manger and rack, plain, price 2*l.* 5s. 6d.; ditto enamelled, price 3*l.*; ditto galvanized, price 3*l.*; an iron corner manger and water trough, plain, with fittings, price 2*l.* 2s., enamelled, with fittings, price 2*l.* 17s.; an iron straight manger with fittings, price 12s.; an iron corner manger with water trough, price 15s.; ditto enamelled, price 1*l.* 12s.; a wrought-iron corner hay rack, price 9s.; a wrought-iron straight hay rack, capped, price 16s. 6d.; a cast-iron corner hay rack, galvanized and capped, price 16s. 6d.; a wrought-iron circular hay rack, plain, price 9s.; a cast-iron stable post with boarding groove, price 1*l.* 13s.; ditto extra strong, price 1*l.* 18s.; ditto with ornamental top or ring, price 4*l.* 3s.; an improved iron stable guttering with moveable covers, angles and tee pieces for ditto, price 2s. 6d. per foot, angles for ditto 3s. 6d. each, tee pieces for ditto 3s. 6d. each; a horse pot, trapped to prevent smell, &c., price 6s. to 7s. each; several sizes of an iron circular pig trough, price from 5s. to 2*l.* 6s.; an iron improved double pig trough, for 14 pigs, price 10s. 6d.; ditto for 8 pigs, price 12s. 6d.; ditto for 10 pigs, price 17s. 6d.; an iron improved single pig trough, for 7 pigs, price 8s. each, for 4 pigs, price 9s. 6d. each, for 2 or 3 pigs, price 15s. each, and for 4 pigs, price 19s. 6d. each, all manufactured by the exhibiters; (new implement) a pig trough, price 15s., invented by Prof. Varnell, of the Royal Veterinary College, and manufactured by the exhibiters; an iron enamelled wash stand and top for stables, price 1*l.* 1s.; a set of collar-bar sheep hurdles, price 4s. 9d. each; ditto (new implement) with top horizontal bar ⅝ in. round iron, price 5s. each; (new implement) a red collar-bar cattle hurdle, price 5s. 6d.; (new implement) a strong collar-bar ditto, price 6s.; (new implement) a collar-bar ox hurdle, price 7s. 9d.; ditto (new implement) extra strong, price 8s. 6d.; (new implement) a collar-bar deer hurdle, price 8s. 6d.; ditto (new implement) extra strong, price 12s. 6d., all invented and manufactured by the exhibiters; several specimens (all new implements) of hurdles collar-barred, wired, game proof, for sheep, cattle, and deer, price per yard from 1s. 3d. to 4s. 4d.; (new implement) a wire garden hurdle, collar-barred, price 5s. 9d., 5s. 6d., and 6s. 9d., invented and manufactured by the exhibiters; a continuous flat bar running fence for oxen, horses, cattle, and sheep, price 9½d. and 1s. 1d. per foot, manufactured by the exhibiters; (new implement) a sheep-folding hurdle, price 11s., invented and manufactured by the exhibiters; a specimen of strained wire, containing 160 yards in length, price 9s. 9d.; a corner standard, for wire fencing, price 19s. 6d.; ditto, price 1*l.* 2s. 6d.; a middle standard, for wire fencing, price 19s. 6d.; ditto, price 1*l.* 2s. 6d.; an intermediate upright, for wire fencing, price 10d. each; a fencing, with cast-iron standards, price 1s. 4½d. per foot; ditto, price 1s. 1d. per foot; an improved foot gate, price 1*l.* 1s.; a wrought-iron field gate, price 2*l.* 12s. 6d.; a wrought-iron round-barred field gate, price 4*l.* 10s.; a superior ditto, price 5*l.* 10s.; a pair of wrought-iron round-barred field gates, price 6*l.*; ditto, price 2*l.* 10s.; samples of wire game proof netting, 1½ in. mesh, ditto 2 in. mesh, and 2½ in. mesh, the prices are reckoned at per lineal yard, 2 ft. wide, from 4½d. to 9½d.—all manufactured by the exhibiters.

Fowler and M'Collin, of Kingston-upon-Hull, Yorkshire.

A six-horse power portable steam engine, price £190, improved and manufactured by the exhibiters; (new implement) a patent pantile machine, price for small size £28, large size £30, invented by Stephen Spalding, of Hull, improved and manufactured by the exhibiters.

Albert and Theodore Fry, of Bristol.

A one-row small occupation seed and manure drill, price £6 10s. (obtained an extra prize at the R. A. S. of Ireland's Show, held at Athlone, 1856); (new implement) a two-row seed manure drill, price £17 10s., and a grass seed distributor, price £3 10s., invented, improved, and manufactured by the exhibiter (the latter has taken prizes at Plymouth, Bath, Tiverton, Yeovil, and Athlone, Ireland); (new implement) an iron horse hoe for green crops on ridge and flat, price £3 10s., with extra shares £3 17s. 6d.; (new implement) an iron horse hoe for green crops, specially adapted to work horizontally along the side of the hill, price £3 15s., with extra shares £4 2s. 6d.; and two specimens of (new implement) a press plough, price, fitted with iron mouldboard and one wheel £4, with steel mouldboard £4 10s., if with two wheels 10s. extra, with skim coulter 5s. extra, these articles are invented by R. Cozens, of Pilton, improved and manufactured by the exhibiters; a grass cutting machine, price £5 10s., invented by Budding, of Dursley, improved and manufactured by exhibiters; a Wiltshire waggon, price 3-inch wheels £35, improved and manufactured by the exhibiters; a skeleton harvest cart, price with 3½-inch wheels £15 15s., invented by J. Hannan, of Burcote Park, Oxon, improved and manufactured by the exhibiters; a Newport prize cart, price with 3½-inch wheels £15, and (new implement) a general purpose farm cart, price £16 16s., invented, improved, and manufactured by the exhibiters; two sizes of a small occupation corn dressing and winnowing machine, price £5 15s. and £7 7s., improved and manufactured by the exhibiters; a compound action clod crusher and roller, price £16, if with travelling wheels £1 10s. extra, invented and improved by J. Paterson, of Beverley, manufactured by the exhibiters; (new implement) a one horse power, price £11 10s., if adapted for two horses £1 5s. extra; three sizes of Cornes' chaff machine, price £5 10s., £8 10s., and £16, invented by J. Cornes, of Barbridge, improved and manufactured by the exhibiters; a chaff machine, price £4, improved and manufactured by the exhibiters; three specimens of a root grater, price 3*l.* 10s., 4*l.* 4s., and 5*l.*, invented by Bushe and Barter, of Lismore, Ireland, improved and manufactured by the exhibiters; a double action turnip cutter, price 5*l.* 10s., invented by J. Gardner, of Banbury, improved and manufactured by the exhibiters; an oilcake crusher, price 3*l.*, improved and manufactured by the exhibiters.

George Cottam and Samuel Hallen, of 2, Winsley-street, Oxford-street, London, W.

A saw table, price 15*l.*, invented by George Cottam, and manufactured by the exhibiters; a carriage setter, price 1*l.* 5s.; ditto, price 15s.; ditto in iron, price 18s.; an oat bruiser, price 4*l.*, a chaff-cutting machine, price 4*l.* 10s., and an Indian corn or maize sheller, price 6*l.* 10s., manufactured by the exhibiters; an odometer, price 3*l.* 10s., and a dynamometer or draught gauge, price 7*l.*, invented by George Cottam, and manufactured by the exhibiters; a sanitary horse pot, price 6s., ditto, price 8s. 6d., invented by the Sanitary Commissioners, and manufactured by the exhibiters; an improved cast-iron stink trap, price, 10 inches 10s., 12 in. 1*l.*; a sample of stink traps, price 6 in. 1s. 3d., 9 in., 2s. 6d. each; a sample of stable grates and frames, price, 8 in. 1s. 9d., 12 in. 4s. 3d., 18 in. 12s. 6d. each; a sample of channel grates and frames, price, 6 by 9 in. 1s. 10d., 9 by 9 in. 4s. 6d. each; a sample of surface drains, price 2s. per foot; a sample of semi-covered gutters, price 1s. 2d. per foot; a sample of cast-iron ventilators in various sizes and shapes, price from 1s. 6d. to 12s. 6d. each; an improved circular ventilator, price 1*l.* 1s.; a sample of stable pails (galvanized), price (in two sizes) 4s. 6d. and 6s. 6d. each; a large manger and wrought-iron rack, price 3*l.* 10s.; a corner manger (cast-iron), price 12s.; a cast-iron three feet corner manger (enamelled), price 1*l.* 11s.; a double corner manger (enamelled), price 1*l.* 13s.; a corner enamelled manger, water trough, and wrought-iron rack, price 4*l.* 4s. 6d.; an enamelled manger and water trough fitted together on a cast-iron plate, price 2*l.* 12s. 6d.; a wrought-iron corner hay rack, galvanized and fitted with capping, price 16s. 6d.; and a loose box, price 27*l.*, all manufactured by the exhibiters; a loose box, price about 32*l.*, a stall for a stable, price, with yellow deal partitions 11*l.*, if with oak partitions 13*l.*, and another size stable stall, price 3*l.* 3s., invented by Louis Cottam, and manufactured by exhibiters; a wrought-iron corn bin, price 1*l.* 10s.; other sizes, 2*l.* 2s. and 3*l.*; an improved iron corn conductor and meter, price 7s. 6d., supply pipe 1s. per foot, and stable pump, price 2*l.* 7s., manufactured by the exhibiters; a patent cast-iron saddle and harness bracket, price, from 4s. plain to 11s. 6d. covered; a sample of collar holders, price 2s. 6d.; a harness bridle holder, price 1s. 6d., and a saddle bridle holder, price 10d., invented by George Cottam, and manufactared by the exhibiters; a board of samples of saddle and harness brackets and preserving saddle harness brackets, various prices, and a sample of rack, pillar, and halter chain, manufactured by the exhibiters; a serrated chain harrow, price 4*l.* 15s., invented by George Cottam, and manufactured by the exhibiters; another size, 5*l.* 15s.; a sample of iron hurdles, price from 4s. 6d. to 8s. 6d. each; bolts and nuts 1d. each.

Louis Cottam, of 3, Winsley-street, Oxford-street, London, W.

A sample of oilcake, price 10*l.* per ton, manufactured by Nicholay, Gresham, and Armstrong, the Isle of Dogs.

William Hensman and Son, of Woburn, Beds, and Linslade Works, near Leighton Buzzard.

A patent four-horse power bolting barn works, price 33*l.* (the prize of 20*l.* was awarded to these works at the Exeter Meeting, 1850, also a prize medal at the Great Exhibition, 1851); a patent corn and seed drill on an improved principle, price £21 with extras (a prize medal was awarded to this drill at the Great Exhibition, 1851, and a silver medal at the York Meeting, 1848); a patent portable thrashing machine of two-horse power, price £40; an improved horse hoe, price £3 5s.; a patent hand thrashing machine, price £13; and a patent iron plough marked W. 1, price £4 5s., with extras, all invented, improved, and manufactured by the exhibiters.

Holmes and Sons, of Prospect Place Works, Norwich, Norfolk.

(New implement) a patent steam engine, with ploughs, &c., price with four ploughs £155, invented and manufactured by the exhibiters; a drill for corn and general purposes, price £29, with improved delivering barrel and scrapers £2 10s. extra; an improved corn and seed drill for large occupations, price £27 2s.; a corn and seed drill for smaller occupations, price for 8 rows £17, for 10 rows £19 10s.; the economical seed and manure drill for flat or ridge work, price £13 13s. with extras (was awarded the prize of £5 at the Royal Agricultural Meeting at Carlisle, 1855, the prize of the Bath and West of England Society four successive years, and the first prize of £5 by the Norfolk Society as the best improved implement at Swaffham, 1855); a prize manure and seed drill, price £25; an improved prize seed and manure drill for the flat, price £20 (was awarded the Bath and West of England Agricultural Society's prize at Bath, 1854); and a 30-row lever seed drill with coulters for linseed or grass seeds, price 25*l.*, all invented, improved, and manufactured by the exhibiters; a ridge drill with rollers attached, for turnips and mangel wurzel, price 5*l.* 15s., with wood carriage wheels 7*l.* 14s., improved and manufactured by the exhibiters; a seed and manure drill on the ridge or flat, price 6*l.*, with two rollers 6*l.* 18s., invented and manufactured by the exhibiters; a 2-row prize hand barrow drill for turnips or mangel wurzel, ridge or flat, price £2 15s. (had the Royal Agricultural Society's prize awarded to it at Norwich, 1849); a single row hand drill, price 2*l.*; and an improved prize manure distributor, price 14*l.*, invented, improved, and manufactured by the exhibiters (the last was awarded the Royal Agricultural Society's prize at Exeter, also prizes at Taunton 1852, Bath 1854, and Norwich 1854 and 1856); (new implement) a seed and corn broadcast sowing machine with cups, price 9*l.* 10s., and a steerage horse hoe on the flat or ridge, price 5*l.* 10s., invented and manufactured by the exhibiters; an eight-horse improved portable steam engine, for thrashing, sawing, and other agricultural purposes, price 250*l.*, improved and manufactured by the exhibiters; a combined portable thrashing machine, with straw shaker, riddling, winnowing, chaff separating, hummelling, and sacking apparatus, price £120, invented, improved, and manufactured by the exhibiters (the first prize medal was awarded to this machine at the Great Exhibition, 1851); a four-horse power portable steam engine, price 180*l.*, improved and manufactured by the exhibiters: a combined portable thrashing machine, with straw shaker, riddling, winnowing, chaff separating, hummelling, and sacking apparatus, price 95*l.*, without hummeller and sacking apparatus 87*l.*, invented, improved, and manufactured by the exhibiters; a complete portable self-acting circular-saw table with rails and carriages, price with 42 inch saw 40*l.*, with carriage wheels 45*l.*, with extra gearing to draw timber back 60*l.*, improved and manufactured by the exhibiters; an improved steam power portable clover-seed drawing machine, price 45*l.*, and a corn dressing or winnowing machine, price 11*l.* 11s, invented, improved, and manufactured by the exhibiters.

E. and T. Humphries, of Pershore, Worcestershire.

A combined thrashing, shaking, riddling, horning, winnowing, and sacking machine, price 83*l.*, invented, improved, and manufactured by the exhibiters; another size, 93*l.*; a six horse power portable steam engine, price 220*l.*, invented, improved, and manufactured by Clayton, Shuttleworth, and Co., of Lincoln: a winnowing or corn dressing machine, price 12*l.* 10s., invented, improved, and manufactured by the exhibiters.

William Newzam Nicholson, of Newark-upon-Trent, Nottinghamshire.

A steerage horse hoe, price 7*l.* 10s., invented by Revell, of Barnby, and manufactured by the exhibiter; a steerage horse hoe, price 7*l.* 10s. invented by Smith, of Kettering, and manufactured by the exhibiter; a patent haymaking machine for one horse, price 15*l.*, (new implement) a patent haymaking machine for two horses, price 21*l.*; a horse rake, 7*l.*, five sizes of a machine for breaking oilcake for beasts and sheep, price from 3*l.* 3s. to 9*l.* 9s. (obtained prizes of 5*l.* at Norwich, 3*l.* at Gloucester, and 5*l.* at Exeter, a prize medal at the Great Exhibition, and high commendation at Lincoln); a winnowing or corn dressing machine, which may be also used as a blower, price 10*l.*, all invented, improved, and manufactured by the exhibiter; (new implements) three sizes of a patent rotary corn screen and riddle for smaller occupations, price 5*l.* 10s., 8*l.* 8s., and 10*l.* 10s., invented by John Palmer, of Stockton-on-Tees, improved and manufactured by the exhibiter; a 2½-horse portable steam engine on four wheels, price 60*l.*, invented, improved, and manufactured by the exhibiter; the four following article can be attached to the above steam engine, a set of steaming pans, price £2 10s., compound linseed pans from £4 10s., a chaff cutter, price 12*l.*, a corn crusher and root pulper, price 8*l.* 8s. to 10*l.* 10s., and a circular driven sawtable, price 8*l.* 8s.; a washing machine, price L6, and a machine for wringing and mangling, price L5 10s., invented, improved, and manufactured by the exhibiter; a set of stable stall fittings, consisting of manger, hay rack, and water trough, price L3 10s., a manger, price, plain 16s., enamelled 8s. extra, and a corner manger, same price, improved and manufactured by the exhibiter; three sizes of a cottage cooking grate, price 36 inches wide L1 18s. 6d., larger sizes L2 6s. and L2 15s. (obtained a prize of L5 at York, L5 at Exeter, and silver medal at Lincoln), a superior large cooking range for farm and other kitchens, price L13 10s., a cottage bedroom grate, price L1 2s., and a cottage pump and sink, price L2, invented, improved, and manufactured by the exhibiter.

Richmond and Chandler, of Salford, Manchester, and of South John-street, Liverpool, Lancashire.

Five sizes of an improved chaff cutting machine, price L3 15s., L4 10s., L7, L10, and L15 12s. (awarded the prize at the Carlisle Show of the Royal Agricultural Society), two sizes of an improved corn crusher, price L5 5s. and L6 10s., a linseed crusher, price L6 10s., an improved excise malt mill, price L6 10s., an improved grain and linseed crusher, price fitted with pulley L14 15s., a corn crusher for power, price L10 12s., an improved root washer, price L4 4s., and an improved steaming apparatus, price L6 9s., invented, improved, and manufactured by the exhibiters; a patent sack holder, price L1 3s., invented by Henry Gilbert, of London, improved and manufactured by the exhibiters: a patent wheel sack holder, price L1 12s., invented by Henry Gilbert, of London, improved by Joshua Cooch, of Harleston, and manufactured by the exhibiters: a litter cutter, price L7, invented, improved, and manufactured by the exhibiters.

Warren Sharman, of Melton Mowbray, Leicestershire.

A bundle of improved registered tubular iron hand hay or corn rakes, price 16s. 6d. each, invented, improved, and manufactured by the exhibiter; a bundle of wood drag rakes with iron teeth, price assorted 24 teeth 10s. 6d. each, 26 teeth 11s. 6d., 28 teeth 12s. 6d., 30 teeth 13s. 6d.; a bundle of improved registered tubular iron twitch rakes, price 3s. 6d. each; a bundle of two-peck iron root or chaff scuttles, price 2s. 6d. each, ditto three-peck 3s. 3d., ditto four-peck 4s., manufactured by the exhibiter; a bundle of sheet iron filling scuttles, price from 2s. 6d. to 4s. each; a bundle of sheet iron baskets, price 2s. 6d. to 3s. each; a bundle of sheet iron buckets, to hold 3½ gallons, price 1s. 8d. to 2s. 3d. each; a poultry fountain with two outlets, price 7s., ditto with three outlets, price 10s. 6d., and an iron sack truck, price 12s., manufactured by the exhibiter. The following are designed and manufactured by the Coalbrookdale Company, of Coalbrookdale: a handsone cast-iron double garden chair with wood bottom, statue-bronzed, price £3 18s., painted £3 15s.; a handsome cast iron garden chair with wood bottom (statue-bronzed and painted), price from £2 12s. 6d. to £2 18s.; a single garden chair (green-bronzed), price from £1 15s. to £2 13s.; a handsome cast iron garden chair (green-bronzed), price from £1 15s. to £2 8s.; a handsome cast iron hat, coat, and umbrella stand (statue-bronzed), price from £3 to £3 15s. The following are all designed and manufactured by Gibbs and Co. of Glascotte: a terra cotta ivy-leaf vase and pedestal, price £1 8s.; a terra cotta water-lily vase and pedestal, price £3 10s.; a terra cotta Greek vase and pedestal, price £2 15s.; a terra cotta Warwick vase pedestal, price £4 10s.; a terra cotta basket vase only, price £1; a terra cotta oak-leaf vase only, price 11s.; a terra cotta Bacchanalian vase only, price £1 14s.; a terra cotta twisted vase, price 13s. 6d.; a terra cotta pillar vase only, price 8s. 6d.; a terra cotta basket-work, flower basket, and stand, price 6s. 6d. and 13s.; a terra cotta convolvolus mignonette box, price 11s.; a terra cotta lily-side mignonette box, price 8s. 6d.

Thomas Johnson, of Bank Buildings, Leicester.

(New implement) a wrought iron turf regenerator and paring plough, price £6 10s., invented by Thomas Smith, Esq, of Fir Hill, Draxford, and manufactured by the exhibiter; a wrought iron trussed-beam turf and stubble paring plough, price £5 10s.; a moulding or ridging plough, with trussed iron beam, wrought nose, &c., price £3 14s.; (new implement) a mill for kibbling beans, peas, Indian corn, oats, barley, &c., price £4 4s., and an improved cottage mangle, fitted with compound leverage, price £4 4s., invented, improved, and manufactured by the exhibiter; a turnip, mangel wurzel, and manure drill, price £7; a turnip and mangel wurzel drill, price £3 6s.; a hand turnip and mangel wurzel drill, price £2 10s., and a linseed cake machine, price £3 6s, improved and manufactured by the exhibiter; a platform weighing machine, price £3 5s., invented, improved, and manufactured by W. and T. Avery, of Birmingham; an ornamental cast iron rustic garden chair, oak pattern, painted, price £1 12s., and a strongly-fitted garden seat, with wood back and cast iron rustic ends, painted, price £1 2s, manufactured by the exhibiter; a handsome Elizabethan cast iron garden chair, with wood bottom, different patterns, price 4 feet long £2 8s., 5 feet long £2 12s. 6d., 6 feet long £2 17s. 6d., and an elegantly bronzed double chair, for garden or hall, with wood bottom, 5 feet long, price £3 18s. 6d., manufactured by the Coalbrookdale Company; a light wood garden chair, with wrought iron ends, price 4 feet long 16s.; three sizes of a small cast iron fluted garden vase, fitted on cast pedestal, price £1 13s. 6d., £3 5s., and £3 13s. 6d., manufactured by the exhibiter; an ornamental cast iron lotus garden vase and pedestal, price £1 10s., and an ornamental bronzed iron garden stool, price 12s., cast iron ditto 8s. 6d., designed and manufactured by the exhibiter; an improved garden engine, price £5 15s., improved and manufactured by John Dore, of London; two sizes of a strong cast iron garden roller, fitted with wrought handle, balance weight, &c., price £2 4s. and £2 12s. 6d., manufactured by the exhibiter; an elegant cast iron flower stand and table, with nine branches, on ornamental pillar, &c., price £2 12s. 6d., ditto with five branches price £1 18s. 6d, designed and manufactured by the exhibiter; a set of improved stable fittings, consisting of rack, manger, and water trough, price fitted together plain £2 10s., enamelled £3 3s., improved and manufactured by the exhibiter; a cast iron circular revolving pig trough, price with eight divisions 18s. 6d., with five divisions 11s. 6d., manufactured by the exhibiter; an ornamental cast iron circular hall table, with revolving top, on massive pedestal, price £1 17s. 6d.; an elaborate cast iron combined hall table, umbrella, stick, coat, and hat stand, price £9 10s.; a handsome bronzed hat, coat, and umbrella stand, £3 12s.; a handsome cast iron ornamental hall table, price £4 15s., and a handsome cast iron umbrella and hat stand, price £3 6s., designed and manufactured by the exhibiter.

WILLIAM SMITH, of Kettering, Northamptonshire.

Four sizes of an improved steerage horse hoe, with double bar, price £7 10s. with lever £1 extra, £6 10s. and £9 10s., (commended by the judges at Carlisle in 1855, and received a first-class medal at Paris in 1855 and 100 fr. in 1856, and also a prize of £6 at Athlone in 1856); an improved double-blasted winnowing machine, price £13 13s., (a prize of £5 awarded to this machine at the Yorkshire Agricultural Society's meeting, and also three prizes at other meetings), an improved double-blasted winnowing machine, price £11, all invented, improved, and manufactured by the exhibiter.

SMITH AND ASHBY, of Stamford, Lincolnshire.

A patent double-action and reverse motion haymaking machine, with new patented improvements, price £15 15s., (thirty-five first-class prizes have been awarded to this machine, and the prize medal of the Great Jubilee Meeting of the Royal Agricultural Society of Austria, held at Vienna, in May last, 1857); a patent steel-tooth horse rake, for hay, corn, stubble, couch-grass, &c., price £8, with iron teeth £7 10s. (has obtained numerous first-class prizes); a patent wheel hand rake, for hay, corn, couch-grass, stubble, &c., price £2; a 13-inch 3-knife patent safety chaff cutter, for horse or steam power, with new patented improvements, price £13 10s., extra for pulley £1, (this machine has obtained a great number of prizes); a 10-inch 2-knife ditto, price £9 10s.; a 10-inch 3-knife patent safety chaff cutter, with new patent presser, for steam, horse, or hand power, price £10 10s., extra for pulley 10s.; a 10-inch 2-knife ditto, price £7 7s.; an 8½-inch 2-knife patent safety chaff cutter, for hand power, price £5 12s. 6d., (received the commendation of the Judges of the Royal Agricultural Society of England at Carlisle, 1855); an 8-inch 2-knife ditto, price £4 10s.; a registered double-action oilcake-breaking machine (hand power) for sheep and oxen, price £3 10s. (was highly commended by the Judges of the Dublin Spring Cattle Show, 1856, and received a special prize from the Bath and West of England Agricultural Society at Yeovil, 1855), all invented, improved, and manufactured by the exhibiters; an improved corn crusher (No. 2), for kibbling beans, peas, oats, malt, Indian corn, &c., price £6 10s., extra for pulley 10s., invented, improved, and manufactured by Richmond and Chandler, of Salford; an improved corn crusher, or roller mill (No. 2), for crushing linseed, oats, malt, barley, &c., price £8, extra for pulley 10s. (obtained the prize of £5 at the Royal Agricultural Society's meetings at Norwich, 1849; Gloucester, 1853; Lincoln, 1854; and at Carlisle, 1855); a patent root pulper, price £6 6s., extra for pulley 10s. (prizes were awarded to Bentall's pulper at the Dublin Show, 1856; the Yorkshire show at Rotherham, 1856; and the silver medal of the Norfolk Agricultural Society, 1856), invented, improved, and manufactured by E. H. Bentall, of Heybridge; an improved one-horse gear works, for driving chaff cutter, &c., price £10 10s, extra for pulley 20s, extra for connecting rod 10s., invented, improved, and manufactured by the exhibiters; a portable two-horse power steam engine on wheels, price £57 10s., invented, improved, and manufactured by W. N. Nicholson, of Newark.

ALFRED SPARKE, of Norwich, Norfolk.

A manure distributor, price £14; a drill for sowing small seeds, price £25; an eight-horse power portable steam engine, price £250; a patent circular-saw bench, with carriages and tramway, price £75; patent vertical-saw mill, price £50; a chaff cutter on iron frame, with live and dead riggers, price £12; an improved portable clover seed-drawing machine, price £35; and a circular-saw bench, price £20, all invented, improved, and manufactured by the exhibiter.

JONATHAN STALKER, of Penrith, Cumberland.

A two-wheeled plough, price £4 15s.; a swing plough, price £4 6s. (obtained the first prize at the Penrith Agricultural Society's meeting); a double-mouldboard plough, with portable moving mouldboards, price £4, if fitted with fallowing apparatus 15s. extra, with wheel 5s. extra, (gained the first prize at the Cumberland and Westmoreland Agricultural Show, held at Appleby, in 1856; also at Carlisle, Wigton, and Penrith; also the first prize of £2, at the Liverpool and Manchester show, held at Wigan, in 1856); (new implement) a single-horse plough or horse hoe, price £3 10s., if fitted with horse hoe £1 extra; (new implement) a horse hoe or stetch grubber, price £3 7s. 6d.; and bundles of dung forks, price 4s. and 6s. 6d. each, all invented, improved, and manufactured by the exhibiter.

THOMAS STANDING, of Lune-street, Fishergate, Preston, Lancashire.

Several rolls of strong double selvage small diamond mesh hare and rabbit proof wire netting, price from 4½d. to 1s. 2½d. per lineal yard; several rolls of strong double selvage galvanized wire sheep fencing, price from 10½d. to 1s. 6d. per lineal yard; a roll of extra-strong galvanized house, garden wall, flower, fruit, and vine training fencing, price 1s. 4½d. per lineal yard; and a sample card of galvanized and black self-fixing staples, all invented and manufactured by the exhibiter; several sizes of a patent compound-action churn, price from £2 3s. 6d. to £6 2s. 6d, invented, improved, and manufactured by James Eastwood and Co., of Blackburn.

EDWARD WEIR, of 16, Bath-place, New-road, London.

An irrigator liquid manure pump, and fire and garden engine, price £8 8s.; and a hose pipe reel, price of three reels, to hold 1,080 feet, £8 10s.; samples of patent woven hose pipe for irrigation, prices: ½ inch 9d., ¾ inch 11d., 1 inch 1s. 1d., 1¼ inch 1s. 3d., 1½ inch 1s. 5d., 1¾ inch 1s. 7d., 2 inch 1s. 9d., 2¼ inch 2s., 2½ inch 2s. 3d., 2¾ inch 2s. 6d., 3 inch 2s. 9d. per yard; a spirit draining level, price £1 10s., case 1s. extra; and a workman's pendulum draining level, price 15s., invented and manufactured by the exhibiter; a Yankee hydro-thermal churn, price £1 10s., invented by W. S. Clark, of Washington, United States, and manufactured by B. Moore and Co., of 133, High Holborn; an American floating-ball washing machine, price £3 to £10, invented by Hollingsworth, of Indiana, United States, and manufactured by B. Moore and Co., of 133, High Holborn; a mangling and wringing machine, price £4, invented and manufactured by B. Moore and Co., of 133, High Holborn.

EDWARD TENNEY BOUSFIELD, of Sticklepath, near Okehampton, Devonshire.

A horse drag rake, for hay, corn, shittle, &c., price £7 10s., invented, improved, and manufactured by the exhibiter; a patent hay-making machine, price £15, invented by W. N. Nicholson, of Newark, improved and manufactured by the exhibiter; two sizes of an oilcake breaking machine, price £2 5s. and £5 5s., invented, improved, and manufactured by the exhibiter; a washing machine, price £5, invented by W. N. Nicholson, of Newark, improved and manufactured by the exhibiter; a chaff cutter, with two knives, price £5, invented, improved, and manufactured by the exhibiter.

James Comins, of South Molton, Devonshire.

A Great Exhibition prize medal horse hoe, price £3; three sizes of a horse hoe, price £1 15s., £2 2s. and £2 11s.; two sizes of a registered one-way turnover or turnwrest plough, improved for earthing potatoes, ridging for turnips, &c., price £4 10s. and £5 10s., if not required for earthing-up potatoes 10s. less; a patent clod-crusher, land-presser, or pulverizer, price £17, all invented, improved, and manufactured by the exhibiter.

James Woods, of The Suffolk Iron Works, Stowmarket, Suffolk.

A Phillips's patent improved root mincer for hand power, price from 6*l.* to 10*l.* (awarded the Society's prizes at the Lincoln and Carlisle meetings); ditto for steam and water power, price 13*l.*; and a Phillips's patent poppy and weed extirpator and fertilizing lever harrow, price 8*l.* 10s. (awarded the Society's medal at the Chelmsford meeting), all invented by Frederick Phillips, of Brandon, improved and manufactured by the exhibiter; a Phillips's patent improved weed extirpator and fertilizing lever harrow, invented, improved, and manufactured by the exhibiter, price 9*l.* 9s.; an improved horse rake, improved and manufactured by the exhibiter, price 7*l.* 10s., if fitted with extirpator teeth 12*l.* 12s.; an improved grinding and crushing roller mill, price from 5*l.* 15s. to 13*l.* 13s.; and a roller crushing mill, price from 4*l.* 10s. to 11*l.* 11s., all invented, improved, and manufactured by the exhibiter; three sizes of Cornes's chaff cutter, invented by J. Cornes, of Barbridge, improved and manufactured by the exhibiter, price 4*l.* 15s., 8*l.* 8s., and 10*l.* 10s.; a chaff cutter (marked No. 19), improved and manufactured by the exhibiter, price 2*l.* 15s.; a single-action Gardner's turnip cutter, price 4*l.* 10s.; and a double-action ditto, price 5*l.* 10s., invented by J. Gardner, of Banbury, improved and manufactured by the exhibiter; a new portable corn-grinding mill, invented and manufactured by the exhibiter, price 50*l.*; a one-horse power, price 13*l.* 13s.; a two-horse power, price 16*l.* 16s.; and a four-horse portable gear works for thrashing machines, price 32*l.*, all invented, improved, and manufactured by the exhibiter; a two-horse portable thrashing machine, improved and manufactured by the exhibiter, price 37*l.* 10s.; an improved double barley roll, price 8*l.* 8s. (awarded a prize of ten guineas by the Royal Agricultural Society); an iron furrow roll, price 2*l.* 2s.; an iron land roller, price 7*l.* 10s.; a Suffolk broadshare, price 6*l.* 10s.; and an improved Gloucester broadshare, price 6*l.* 16s., all invented, improved, and manufactured by the exhibiter; a Halls' patent cabinet mangle, invented by John Halls, of Bildstone, improved and manufactured by the exhibiter, price 6*l.* 10s.; an asphalting apparatus for laying asphalte flooring, paths, &c., price 17*l.*; and a one-horse cart with jointed harvest frame, price without harvest frame 12*l.* 10s., with ditto 14*l.* 10s., invented improved, and manufactured by the exhibiter; an ornamental flower stand, invented and manufactured by the exhibiter, price 1*l.* 15s.

William Ball, of Rothwell, near Kettering, Northamptonshire.

(New implement) a patent press corn drill on the flat, invented and manufactured by the exhibiter, price 30*l.* (commended by the judges at Carlisle, 1855); a two-horse waggon, invented, improved, and manufactured by the exhibiter, price 30*l.* (a prize was awarded at the Agricultural Society's meeting at Lewes 1852, a first-class prize medal at the Paris exhibition 1855); (new implement) a cart for one horse, invented and manufactured by the exhibiter, price with harvest rails and sideboards complete 16*l.*, another size 14*l.* 10s.; several sizes of an iron plough, invented, improved, and manufactured by the exhibiter, price from 4*l.* 8s. to 5*l.* 10s. (a prize of 5*l.* was awarded to this plough for general purposes at the Royal Agricultural Society's meeting at Norwich 1849, a prize of 7*l.* at Exeter 1850, a first-class prize medal at the Great Exhibition of all Nations 1851, a first-class prize medal at the Dublin Exhibition 1853, a prize of 7*l.* at the Royal Agricultural Society's meeting at Gloucester 1853, commended at Lincoln 1854, a first-class prize medal at the Paris Exhibition 1855, also commended at Carlisle the same year, a first-class prize medal at Melbourne, Australia, 1856, a prize of 4*l.* at Chelmsford the same year); a winnowing machine, price 14*l.*; and a patent elevator for winnowing machine, price 8*l.*, invented by Campain, improved and manufactured by Thomas Luck, of Spalding Common (a silver medal was awarded at the Yorkshire Royal Agricultural Society, Rotherham, 1856, the first prize at the North Lincoln Agricultural Society, Boston, 1855, and first prize at Peterborough 1855); a weighing machine for winnowing machine, invented, improved, and manufactured by Thomas Luck, of Spalding Common, price 3*l.*; and an iron cultivator, grubber, or scarifier, invented, improved, and manufactured by the exhibiter, price 6*l.* 6s.

William Busby, of Newton-le-Willows, near Bedale, Yorkshire.

A one or two-horse cart, invented by William Lister, Esq., of Dunsa Bank, improved and manufactured by the exhibiter, price 13*l.*, harvest raves 2*l.* extra (a prize of 10*l.* was awarded at the Exeter meeting 1850, was included in the award of the council medals of the Great Exhibition of 1851, and had a 10*l.* prize at Lewes in 1852, also the silver medal at Lincoln 1854, and the Bath and West of England Society's prize for three years in succession); a one-horse cart, invented, improved, and manufactured by the exhibiter, price 12*l.*, if with harvest raves 1*l.* 10s. extra, if with rack and pinion 1*l.* extra; an improved one or two-horse cart, invented by Mr. Scott, of Brown Close, Yorkshire, improved and manufactured by the exhibiter, price 13*l.*, with harvest raves 2*l.* extra; an improved Hannam's skeleton harvest cart, invented by Mr. Hannam, of Burcot, Oxon, improved and manufactured by the exhibiter, price 16*l.* 10s.; a two-wheeled plough for general purposes, price 4*l.* 10s., if with skim, clasps, chain and weight, 7s. 6d. extra (received the award of the council medal at the Great Exhibition of 1851, a first-class medal at the Paris Exhibition, and also six head prizes from the Royal Agricultural Society of England in eight years, also 10*l.* at the Rotherham meeting of 1856); a two-wheeled deep plough, price 5*l.* 5s., if with skim, clasps, chain and weight, 7s. 6d. extra (received the prize at the Society's meeting at Northampton in 1847, 10*l.* at York 1848, and 7*l.* at Lewes in 1852); a one-wheeled plough, price 3*l.* 15s.; a five-tined horse hoe, price 3*l.* 15s., another size 3*l.* 10s., and another 3*l.* 15s.; a five-tined horse hoe with revolving harrow, price 3*l.* 3s.; a horse hoe with three tines and revolving harrow, price 2*l.* 10s. (awarded prizes by the Royal Agricultural Society five years in succession, also prizes at the Bath and West of England Society at Taunton 1852, at Plymouth 1853, at Bath 1854, and Taunton 1855); a horse hoe, price 2*l.* 5s.; and a light horse hoe, price 2*l.*, all invented, improved, and manufactured by the exhibiter; a patent implement for topping and tailing turnips, invented by William Lister, Esq., of Dunsa Bank, improved and manufactured by the exhibiter, price 6*l.* 15s.

William C. Cambridge, of Bristol.

(New implement) a new patent eight-horse power traction or locomotive engine with portable railway, price 500*l.*; an eight-horse power portable steam engine, price 250*l.*; a four-horse power portable steam engine, price 160*l.*; two patent portable combined thrashing, riddling, shaking, winnowing, and dressing machines, price 120*l.*; a portable four-horse power thrashing machine, price 40*l.*, another size 55*l.*; a patent portable three-horse power thrashing machine, price 45*l.*; a two-horse power ditto, 40*l.*; (new implement) a new patent double-blast winnowing machine, price 12*l.* 12s., other sizes 10*l.* 10s. and 8*l.* 8s.; a patent press-wheel roller, or clod crusher, price from 15*l.* to 21*l.* 5s.; a new patent self-cleansing press-wheel roller, or clod crusher, price from 14*l.* 5s. to 18*l.* (obtained the prize of the Royal Agricultural Society at Chelmsford 1856, also the prize of the Manchester and Liverpool Society at Wigan 1856); patent press-wheel rollers, price 10*l.*, 12*l.*, and 13*l.*; and new patent self-cleansing press-wheel rollers, price 10*l.*, 12*l.*, and 13*l.*, all invented, improved, and manufactured by the exhibiter; several sizes of a patent self-relieving chain harrow, invented by John Cartwright, of Shrewsbury, improved and manufactured by the exhibiter, price 3*l.* 15s. to 6*l.*

Hugh Carson, of Warminster, Wilts.

A wrought-iron horse hoe, price 3*l.* 3s.; a wrought-iron horse hoe and scuffling plough, price 3*l.* 10s. (received the prize at the meeting of the Bath and West of England Society at Yeovil 1856, and highly commended by the judges at Tiverton in 1855); several sizes of a wrought-iron plough, price with cast-iron turnfurrow 2*l.* 15s. and 3*l.* 10s., with skim coulter 10s. 6d. extra; a wood and iron plough, price with cast-iron turnfurrow 2*l.* 15s., with skim coulter 10s. 6d. extra; a seven share cultivator or scarifier, with side levers, price with side levers 12*l.*; a five-share cultivator or scarifier, price 9*l.* (it was very highly commended by the judges at the Royal Agriculutral Society's meeting at Chelmsford in 1856, and highly commended by the judges of the Bath and West of England Society at Yeovil in 1856); and (new implement) a three share narrow grubber and scarifier, price 6*l.* 6s., all invented, improved, and manufactured by the exhibiter; a patent drag harrow, cultivator, or scarifier, invented, improved, and manufactured by R. Coleman, of Chelmsford, price 8*l.*; a set of wrought-iron harrows, price the set of six 4*l.*; a registered cross-cut wheel roller and clodcrusher, price 16*l.*; and a registered cross-cut wheel roller and clodcrusher, with scraper, price 17*l.* 10s., invented, improved, and manufactured by the exhibiter (the last article was highly commended by the judges of the Royal Agricultural Society at Chelmsford in 1856); (new implement) a registered self-cleaning cross-cut wheel roller and clodcrusher, invented and manufactured by the exhibiter, price 18*l.*; three sizes of a registered cross-cut wheel roller, invented, improved, and manufactured by the exhibiter, price 10*l.* 10s., 12*l.* and 14*l.*; two sizes of a double cylinder field roller, improved and manufactured by the exhibiter, price 11*l.* and 12*l.*; two sizes of an improved iron field roller, price 9*l.* and 10*l.* 10s.; several specimens of a chaff-cutting engine, for horse or steam power, price from 11*l.* 11s. to 15*l.* (was highly commended by the judges of the Bath and West of England Agricultural Society at their meeting at Yeovil in 1856, and at their meeting at Tiverton in 1855); a chaff-cutting engine, for horse or hand power, price 8*l.* 10s., with safety clutch 9*l.* 10s.; several sizes of a chaff-cutter, for hand power, price 4*l.* to 6*l.* 10s., all invented, improved, and manufactured by the exhibiter (was commended by the judges of the Bath and West of England Agricultural Society at their meeting at Yeovil in 1856); two sizes of a Moody's turnip cutter, with wheels and handles, invented by Edmund Moody, late of Maiden Bradley, improved and manufactured by the exhibiter, price 4*l.* 10s. and 5*l.* 5s. (received the prize from the Bath and West of England Agricultural Society at Taunton in June 1852, at Plymouth in June 1853, at Tiverton in June 1855, and highly commended at Yeovil in 1856, also highly commended by the judges of the Royal Agricultural Society at the meeting at Gloucester in July 1853, at Lincoln in July 1854, and at Carlisle in July 1855); a malt and linseed crusher, on iron stand, invented, improved, and manufactured by the exhibiter, price 8*l.*; a malt mill without stand, for hand or steam power, improved and manufactured by the exhibiter, price 5*l.* 5s.; an oilcake crusher, price 4*l.* 4s.; a single cheese press, with double lever, price 2*l.* 10s.; a double cheese press, with double lever, price 5*l.* (these presses obtained the prize at the meeting of the Bath and West of England Agricultural Society at Plymouth in June 1853, and were highly commended at the meeting of the same society at Tiverton in June 1855, and at Yeovil in June 1856); a single cheese press, with double lever and pulley, price 2*l.* 15s.; and a double cheese press, with double levers and pulleys, price 5*l.* 5s., all invented, improved, and manufactured by the exhibiter.

John Cooper and Co., of Ipswich, Suffolk.

A patent self-acting counterbalance lever horse rake, invented by Thomas Smith, of Bredfield, and manufactured by the exhibiters, price 7*l.* 18s.; and (new implement) a patent self-acting counterbalance lever horse rake and fertilizer combined, invented by Thomas Smith, of Bredfield, improved by the exhibiters, and manufactured by Messrs. Cooper and Hurwood, of Ipswich, price 9*l.* 13s.

James Cornes, of Barbridge, near Nantwich, Cheshire.

A registered chaff cutting machine (No. 5) with three knives, price 13*l.*, another size price 15*l.* (gained the first prize given by the Royal Agricultural Society of England for eleven years in succession); a registered chaff cutting machine (No. 4) with two knives, price 6*l.* 15s., another smaller size, price 4*l.* 10s., all invented by John Cornes, sen., improved and manufactured by the exhibiter.

W. Crowley and Sons, of Newport Pagnell, Bucks.

A light one-horse cart for general purposes, price 15*l.*; a liquid manure or water cart, price 13*l.*; a set of Newport hames for general purposes, price 1*l.* 8s, and a set of Newport hames, price 2*l.* 2s., all invented, improved, and manufactured by the exhibiters.

William Dray and Co., of Swan Lane, London.

Ten specimens of an improved patent reaping machine, price 25*l.*, extra for dividing iron 1*l.* 1s., (received the prize of the Royal Agricultural Society at Lincoln 1854, the judges at the trial at Boxted in 1856 gave it a prize of 15*l.*, the Austrian gold medal of honour has been awarded to this machine in the present year), invented by Obed Hussey, of the United States, improved and manufactured by the exhibiter; an improved patent reaping machine, price 45*l.* (obtained the prize at the Royal Agricultural Meeting 1855), invented by John Palmer, of Stockton, improved and manufactured by the exhibiters; a patent mowing machine, price 25*l.*, invented by Catchcombe, of the United States, improved and manufactured by the exhibiters; several sizes of an improved light agricultural waggon, price 18*l.* 18s. to 22*l.*; a light van, price 24*l.*; an improved waggon, price 27*l.*; a light agricultural cart, price 10*l.* 10s., another size 12*l.* 12s., and a larger 14*l.* 15s.; several specimens of an improved patent winnowing and blowing machine, price 10*l.* 10s. and 11*l.* 11s., and with cliver apparatus 4*l.* extra (obtained prize at the Royal Agricultural Society of Ireland, at Carlow 1855, also at Manchester and Liverpool Agricultural Society 1856); and several specimens of an improved registered chaff cutting machine, price 2*l.* 18s. and 4*l.*, all invented, improved, and manufactured by the exhibiters; three sizes of an improved patent chaff cutting machine, price 4*l.* 5s., invented by John Cornes, of London, improved and manufactured by the exhibiters; an improved chaff cutting machine, price 4*l.* 10s, invented, improved, and manufactured by Richmond and Chandler, of Salford; three other sizes of this machine, price from 7*l.* to 15*l.*; several sizes of an inproved grain crushing machine, price from 3*l.* 15s. to 14*l.* 14s.; an improved grain crushing mill, price 5*l.* 5s.; an improved linseed mill, price 6*l.* 10*s.*, pulley 10s. extra; an improved malt bruising machine, price 6*l.* 10s., all invented, improved, and manufactured by the exhibiter; a patent alliance plough, price 4*l.* 10s., for deep ploughing 5*l.*, invented by M. Armelin, of Paris, improved and manufactured by the exhibiters; an improved plough, price 4*l.* 5s., other sizes 4*l.* 10s. 6d. and 4*l.* 15s., invented, improved, and manufactured by the exhibiters; an iron subsoil plough, price 7*l.* 10s., another size 6*l.* 10s., invented, improved, and manufactured by Gray and Co., of Uddington; an improved circular wrought iron corn bin, price 1*l.* 5s, other shapes and sizes price from 1*l.* 10s. to 2*l.* 10s.; an ornamental garden table, price 1*l.* 16s.; an ornamental garden chair, price 2*l.* 10s.; several sizes of an ornamental garden seat, price 1*l.* 12s. 6d. to 2*l.* 7s. 6d.; a patent tubular iron gate, price 2*l.* 2s., posts 12s. extra (a prize was awarded to these gates at the Irish Agricultural Society's show at Dublin, 1856); tubular fencing, price 3s. 6d. and upwards per yard; several sizes of an improved American churn, price 1*l.* 8s. to 2*l.* 15s.; an improved patent double action pump price 14*l*, wrought iron stand 1*l.* 10s.; a portable farm fire engine, price 7*l.* 15s., ditto with a tank 8*l.* 10s.; a wrought iron galvanized liquid manure pump, price 2*l.* 10s., pipe 3s. per foot extra; an improved weighing machine, price 3*l.* 15s., another size 4*l.* 4s.; several samples of an improved set of agricultural harness, price 4*l.* 10s., all manufactured by the exhibiters; (new implement) a patent pulverizer, price 45*l.*, and (new implement) a patent oilcake breaker, price 10*l.*, both invented, improved, and manufactured by the exhibiters.

Andrew W. Gower and Sons, of Hook, near Winchfield, Hampshire, and Market Drayton, Salop.

A fourteen-row lever drill for corn and manure, and six rows of extra apparatus for manure and seeds upon a large scale, price 50*l.*; a three-row lever manure and seed drill, with front, steerage, price 21*l.*; a fifteen-row lever corn drill, price 30*l.*; a two-row ridge drill for turnips and mangel wurzel and manure, price 10*l.*, ditto without manure apparatus 5*l.*, ditto with apparatus for beans and peas 6*l.* 10s.; a chaff engine, with two knives, price 2*l.* 10s., another size, price 4*l.*, and another size, with three knives, price 5*l.* 15s., all invented, improved, and manufactured by the exhibiters.

Henry Hayes and Son, of Stamford, Lincolnshire.

(New implement) a pair-horse spring waggon, fitted with patent axles, price 34*l.*, invented and manufactured by the exhibiters, improved by Mr. Kemp, of Thirlby Grange; (new implement) a light spring pair-horse waggon, price 42*l.* 10s.; a light spring lorrie or dray, price 30*l.*; (new implement) an improved one or two horse Scotch cart, price

16l., without patent tippings 1l. 10s. less, and (new implement) an improved one-horse Scotch cart, price 13l. 15s., invented, improved, and manufactured by the exhibiters; (new implement) a set of diagonal steel harrows, price 3l. 10s., invented and manufactured by Messrs. Wright, of Stamford.

HILL AND SMITH, of Brierley Hill Iron Works (near Dudley), Staffordshire.

A wrought iron skim or pair-horse scarifier, price 6l., or with cultivating tines 7l.; a wrought iron broadshare and cultivator, price 8l. 10s. (highly commended by the judges at the Chelmsford Meeting of the Society in 1856); two sizes of a wrought iron expanding horse hoe, price 2l. 15s. and 3l. 3s. (the silver medals of the Royal Agricultural Society and the Yorkshire Agricultural Society have been awarded to this implement); a wrought iron light land or barley roller, price 10. 10s. (obtained the prize of 2l. at the Society's meeting at Chelmsford, 1856); a set of patent wrought iron harrows, price 4l., another size price 3l. 3s. (very highly commended at the Chelmsford Meeting); a wrought iron sheep rack, price No. 2, small size, 4l. 4s., No 1., large size, 6l. 6s. (obtained the silver medal of the Society), and a wrought iron sheep trough on wheels, price 1l. 10s., all invented, improved, and manufactured by the exhibiters; a wrought iron sack holder, with sack barrow combined, price 1l. 12s., invented by Henry Gilbert, of London, improved by Henry Cooch, of Harleston, and manufactured by the exhibiters; an iron rotary screening machine, for gravel, ashes, sand, coal, &c., price 6l. 6s., or if with wheels 6l. 16s., manufactured by the exhibiters; a registered chaff cutting machine (Cornes' pattern) (No. 5), price 13l. each length of cut is charged extra 5s., invented by John Cornes, of Barbridge, and improved and manufactured by the exhibiters (obtained the prize of this Society for nine successive years); a chaff cutting machine, price 6l. 10s., invented and manufactured by the exhibiters; a circular iron vermin-proof rick stand, on iron pillars, price from 4l. to 23l. 17s. 6d. each; a specimen of two iron rick stand pillars, with mushroom shaped caps, price 3s. 6d. to 4s. each; several specimens of premium continuous fencing, price 2s. 4d. to 3s. 8d. per yard (obtained the silver medal of the Royal Agricultural Society on two occasions, viz., Southampton and Shrewsbury); a specimen of two kinds of deer park fencing on the continuous principle, price 4s. 1d. to 4s. 7d per yard (obtained the silver medal of the Royal Agricultural Society on two occasions); a selection of premium iron hurdles, price from 1s. 10½d. per yard; a length of strained wire ox fencing, price 1s. 4d. per yard; a wrought iron field gate and posts, price 2l. 10s., (obtained the silver medal of the Royal Agricultural Society, and the first prize of the Royal Agricultural Improvement Society of Ireland, in addition to nine other premiums); a wrought iron field gate, price 1l. 6s.; a set of wrought iron entrance gates, price 8l.; a wrought iron gate and pillars, price 3l. 10s.; a pair of wrought iron entrance gates and pillars, price 9l.; a pair of wrought iron entrance gates, price 10l.; a wrought iron gate and posts, price 1l. 10s.; a pair of wrought iron gates and pillars, price 2l. 10s.; a wrought iron hand gate and posts, price 3l. 10s. another size price 6l. 6s.; a wrought iron field gate and pillars, price 3l. 10s; a pair of handsome wrought iron entrance gates and pillars, price 17l. 10s.; a wrought iron ornamental garden seat, price 2l. 7s. 6d., all invented and manufactured by the exhibiters; a specimen of game-proof netting, price 1d. per foot upwards: a specimen of game-proof plant guards, price from 1s. 6d. each; an iron field gate made of tubular iron, price 1l. 15s.; an iron stall post, with ramped top and bottom rail, price 1l. 10s. (obtained the silver medal of the Royal Agricultural Improvement Society of Ireland); an iron stall post, with top and bottom rail, and middle rail to receive wood divisions of stall, price 3l. 10s.; an iron stall post, top, middle, and bottom rail, with iron open-work for upper portion of divisions for loose box, prices—posts 16s. each, iron work for door 16s., division 6s. 3d. per foot run; an iron stable rack and manger, price 1l. 10s.; an iron manger, with rack and water trough, price 2l.; an iron corner manger, price 15s. 6d; an iron manger straight, price 11s. 6d.; a wrought iron hay rack, circular, for straight wall, price 11s.; a wrought iron rack for a corner, price 8s. 6d.; a ventilator and air brick, price 12s. 6d.; a stable drain and stench trap, price 14s.; a set of improved iron pig troughs, prices—for three pigs 11s. 6d, for four pigs 14s., for six pigs 17s. 6d. each; a wrought iron heating barrow, price 3l. 3s.; a wrought iron barrow for general purposes, price 1l. 7s. 6d.; a specimen of patent black varnish, price 1s. 6d per gallon; and a wrought iron garden seat, price 1l. 15s., all invented and manufactured by the exhibiters; a cast iron rustic garden seat, price 2l.; a rustic garden-table flower stand, price 1l. 2s. 6d.

ISAAC JAMES, of Tivoli, Cheltenham, Gloucestershire.

(New implement) a patent liquid manure distributor, to hold 70 gallons, price 24l. (awarded special prizes at the Bath and West of England Show in 1855, at Stow in 1855, at Liverpool and Manchester Shows in 1856, and at Gloucester in 1856); and (new implement) a patent liquid manure distributor, or water cart, to hold 170 gallons, price 20l., all invented and manufactured by the exhibiter; (new implement) a strong, light two or three horse waggon, price 28l., improved and manufactured by the exhibiter; (new implement) a liquid manure or general portable pump, price 3l. 3s., manufactured by Warner and Son, of London.

JOHN KENDELL, of Cashmoor, near Blandford, Dorsetshire.

A Gloucestershire waggon, price, with double shafts 34l. 4s., with single shafts 32l.; a two-horse Wiltshire waggon, price 32l., with double shafts 2l. 4s. extra; an improved farm cart, price 10l. 10s.; and a very light one-horse cart, price 8l. 8s., all invented, improved, and manufactured by the exhibiter.

JOHN KIDDLE, of Donhead St. Mary, near Salisbury, Wiltshire.

(New implement) a light two-horse waggon, price 17l., invented and manufactured by the exhibiter; an improved one-horse Scotch cart, price 11l., improved and manufactured by the exhibiter.

ARTHUR LYON, of 32, Windmill-street, Finsbury, London.

A machine for pulping steamed roots or vegetables, price 7l. 10s.; a machine for cutting roots or vegetables, price 6l. 10s.; a machine for cutting carrots, &c., price 6l.; a machine for cutting roots, price 6l., a machine for cutting meat, vegetables, &c., price 6l. 6s., another size 3l. 10s.; a machine for cutting roots for feeding poultry, price 2l. 5s.; a machine for cutting or mincing meat, &c., price 2l. (a prize medal was awarded for this machine at the Paris Exhibition), and another size 1l. 10s., all invented, improved, and manufactured by the exhibiters; a machine for cutting cooked food, and keeping warm while being cut, price 2l. 2s., invented by the exhibiter.

SAMUEL HENRY SEWERS, of Curry Rivel, near Taunton, Somersetshire.

(New implement) a manure distributor, or turnip dusting machine, price £25, invented and improved by the exhibiter, and manufactured by Joshua Marsden, of South Petherton, Somersetshire.

JOHN ALLIN WILLIAMS, of Baydon, near Hungerford, Wilts.

(New implement) a steam cultivator, or hauling machine, consisting of two engines and single machine, price of each machine, without the engine, 120l.; (new implement) a combined one-way plough, price 60l., another size 45l.; (new implement) a cultivator, scarifier, and drag, price 45l.; and (new implement) a three-furrow plough, price 30l., all invented and manufactured by the exhibiter.

OLIVER MAGGS, of Bourton, Dorset, near Wincanton, Somersetshire.

A patent eight-horse portable steam-engine, price 250l.; a patent six-horse ditto, price 220l.; a patent five-horse ditto, price 190l.; and a patent two-horse power fixed steam-engine, price 60l., all invented, improved, and manufactured by the exhibiter; a patent combined bolting thrashing machine, with apparatus for finishing the corn for market, invented and manufactured by the exhibiter, price 150l.; a combined bolting thrashing machine, price 90l., another size 85l., a larger size 100l.; a four-horse power portable thrashing machine, price 56l.; and an improved one or two-horse, in iron frame, price 12l. 12s., all invented, improved, and manufactured by the exhibiter; a patent straw shaker, price 15l.; an improved winnowing and finishing dressing machine, price 15*l.*; and a portable corn mill and dressing machine, price with pair of 2ft. 6in. stones 36*l.*, including dressing machine 50*l.*, all invented and manufactured by the exhibiter; an improved oat, bean, and corn crushing mill, price 5*l.* 10s., improved and manufactured by the exhibiter; a bean mill for hand-power, price 2*l.* 5s., manufactured by the exhibiter; a malt bruiser, price 7*l.* 10s., improved and manufactured by the exhibiter; an improved double oilcake breaker, for hand or horse-power, price 10*l.*, invented, improved, and manufactured by the exhibiter; an improved chaff-cutter with three knives, for steam or horse-power, with truck, price 18*l.*; an improved chaff-cutter with two knives, for steam or horse-power, price 13*l.*; an improved chaff-cutter, for hand or horse-power, price 10*l.*; a chaff-cutter for hand-power, price 4*l.*; and a small chaff-cutter with two knives, for hand-power, price 3*l.*, all improved and manufactured by the exhibiter; a patent turnip and root grater, price 4*l.*, invented by Edmund Moody (late of Maiden Bradley), improved and manufactured by the exhibiter; an improved solid beam iron plough, price 4*l.* 15s., if with two wheels 10s. extra, invented, improved, and manufactured by the exhibiter; an improved iron plough with solid beam for general purposes, price with one wheel 3*l.* 10s., with steel breast 10s. extra, with skim coulter 7s. 6d. extra, with two wheels 10s. extra; an improved wood-beam plough, for general purposes, price 3*l.* 17s. 6d.; an improved solid beam iron plough, price 4*l.* 7s. 6d.; and an improved horse drag rake, price 7*l.* 10s., all improved and manufactured by the exhibiter; an improved horse hoe, price 3*l.* 3s.; and an improved grooved roller with scraper, price 16*l.*, invented, improved, and manufactured by the exhibiter; a five-tine Uley cultivator, price 10*l.* 10s., invented by J. Morton, of Whitfield, improved by R. Clyburn, of Uley, and manufactured by the exhibiter; an improved liquid manure cart and distributor, price 15*l.* 15s.; an improved screw and lever cheese press, price 2*l.* 15s.; and an improved double screw and lever cheese press, price 5*l.* 10s., all invented, improved, and manufactured by the exhibiter; a set of improved wrought-iron cider screws and levers, price, screws 9*l.*, one single 3-inch ditto 3*l.* 15s., levers 15s. each; an improved mangling and wringing machine, price 4*l.* 4s.; and a sack cart or truck, price 15s., manufactured by the exhibiter.

Mapplebeck and Lowe, of Birmingham, Warwickshire.

A single-row turnip and mangel-wurzel drill, price 2*l.* 12s. 6d., invented, improved, and manufactured by Rodenhurst, of Drayton; a double-row turnip and mangel-wurzel drill, price 5*l.*, invented and improved by Rodenhurst, of Drayton, and manufactured by the exhibiters; an expanding horse hoe, price 1*l.* 15s., improved and manufactured by the exhibiters; a ditto with two wheels, price 2*l.*; several sizes of an improved platform weighing machine, price with weights complete 3*l.* 5s. to 5*l.* 15s.; a 3-cwt. weighing machine, price 2*l.* 5s.; a 4-cwt. ditto, 3*l.* 10s.; a steelyard, with frame for weighing sacks, &c., price 1*l.* 8s.; a 20-cwt. weighing machine, price with weights complete 12*l.* 5s.; and (new implement) a 2-cwt. weighing machine, price 1*l.* 15s., all invented, improved, and manufactured by W. and T. Avery, of Birmingham; a set of patent draining tools, price 1*l.* 19s., invented by Josiah Parkes, Esq , of London, improved and manufactured by W. A. Lyndon, of Birmingham (the prize of 5*l.* was awarded to the exhibiters for these tools at the Royal Agricultuaal Society's meeting at Northampton 1847, also at Lewes 1852); a set of patent draining tools, price 1*l.* 3s. (the prize of 5*l.* was awarded to the exhibiters for these tools at the Royal Agricultural Society's meeting at Northampton, 1847); another set, price 1*l.* 3s. 3d.; and another set, price 15s. 9d.; a bundle of patent spades, assorted, price, 3s. 3d., 3s. 6d., and 3s. 9d. each; a bundle of bright spades, prices 3s. 9d., 4s., and 4s. 3d.; a bundle of patent shovels, assorted, prices 3s., 3s. 3d., and 3s. 6d. each; a bundle of steel digging forks, five prongs, price 4s. 6d. each; a bundle of cast-steel digging forks, four prongs, price 3s. 9d. each; a bundle of American-pattern cast-steel hay forks, price 1s. 10d., 2s., and 2s. 1d. each; a bundle of American-pattern cast-steel unloading forks, price 2s. 6d. each; a bundle of patent American-pattern cast-steel pitchforks, price 3s. each; a bundle of patent cast-steel couch-grass forks, prices, 4-prong 2s. 11d., 5-prong 3s. 4d. each; several bundles of other descriptions and of various prices, and all invented and manufactured by W. A. Lyndon, of Birmingham; a pair of potato shovels, price 5s. 6d. each; and a pair of hand drag rakes, price 8s. 6d. and 12s. 6d. each, improved and manufactured by the exhibiters; a 3¼-inch manure pump, price 4*l.* 3s.; a water and manure pump, price 4*l.* 12s.; a fire engine in oblong tank, price 18*l.* 5s.; a Stocker's patent lifting pump with brass cylinder, price 5*l.* 15s.; a strong brass lifting pump on plank, price 6*l.* 18s.; and an iron pillar pump, price 1*l.* 18s., all improved and manufactured by Stock, of Birmingham; an improved garden engine, price 5*l.*; an improved portable garden engine, price 1*l.* 17s. 6d., and an iron garden roller, price 2*l.* 5s., all manufactured by the exhibiters; a 22-inch patent lawn-mowing machine, price 7*l.*, invented, improved, and manufactured by Shanks, of Arbroath; a patent lawn-mowing machine, invented by E. Budding, improved and manufactured by Ferrabee, of Thrupp Mills, price 6*l.*; four pair of grass-edging shears, price 2s. 6d., 3s., 4s. 9d., and 6s. 6d. each, manufactured by Isaac Greaves, of Sheffield; three sets of ladies' gardening tools, price 3s., 5s., and 9s. per set, manufactured by the exhibiters; a pair of wrought-iron folding garden stools, with elastic wire seat, price 4s. 6d. each, manufactured by Barnard and Bishop, of Norwich; a pair of Etruscan fluted iron vases, on square pedestals, price 5*l.* 10s. per pair, improved and manufactured by the exhibiters; a pair of new rustic-pattern garden chairs, price 1*l.* 2s. 6d. each, invented and manufactured by the exhibiters; a patent mangle, price 10*l.* 10s.; and a linen press, price 2*l.* 10s., improved and manufactured by the exhibiters; a portable iron bedstead, price 10s. 6d.; and a patent solid iron stump bedstead, price 1*l.*, manufactured by the exhibiters; an oak barrel churn, price 2*l.* 17s. 6d., manufactured by Robinson and Son, of Coventry; a curd mill or grinder, price 1*l.* 10s., manufactured by the exhibiters; a single cheese press, price 2*l.* 10s., improved and manufactured by the exhibiters; a Mercote balance scarifier or tormentor, with thirteen tines, price 2*l.* 15s., invented by Luke Pearman, Esq., of Mercote Hall, and manufactured by the exhibiters; another size 2*l.* 5s.; a chain harrow, price 3*l.* 10s., improved and manufactured by the exhibiters; a patent chain harrow, price 4*l.* 4s., invented, improved, and manufactured by Cartwright, of Shrewsbury; a pair of black pulley-blocks, with iron sheaves (two sizes), price, small 7s., larger 30s. per pair, improved and manufactured by the exhibiters; a pair of best warranted extra-leathered double-nailed smith's bellows, price 3*l.* 3s.; and an improved portable forge, price 4*l.* 4s., improved and manufactured by Onions, of Birmingham; a best-warranted anvil, price 3*l.* 10s., manufactured by the exhibiters; two sizes of an improved black staple vice, price, small 10s., large 17s. 6d. each; two pair of iron arms and boxes, price 15s. and 24s. per pair; and a set of mail patent axles, with long bolts, price 27s. 6d., 30s., and 50s., improved and manufactured by the exhibiters; a bundle of best charcoal fencing wire, price 13s. per cwt., manufactured by Evers, of Cradley; an instrument for straining wire, price 2*l.* 2s., improved and manufactured by the exhibiters; an improved lifting jack, price 5*l.*; another size 10*l.*; a pair of wheel-barrows, price, wood 22s. 6d., iron 30s.; and two sizes of an iron sack cart, price, small 9s. 6d., large 16s. 6d., manufactured by the exhibiters; a wood frame sack cart (two sizes), price, small 12s. 6d., large 15s., improved and manufactured by the exhibiters; a set of imperial iron-bound measures, price 1*l.* 12s. 9d , improved and manufactured by Ranford, of London; an improved hand road-scraping machine, price 3*l.* 10s., improved and manufactured by Bourne and Harris, of Ilchester; a set of cast-iron pig troughs, price, 8s., 10s., and 12s., improved and manufactured by the exhibiters; a cast-iron cattle water trough, price 1*l.* 7s. 6d., manufactured by the exhibiters; a set of cast-iron stable furniture, price 4*l.*, invented, improved, and manufactured by the exhibiters; an assortment of cart and plough traces, price 4d. per lb.; and galvanized ditto, price 5½d. per lb., manufactured by the exhibiters; an improved oilcake breaker, price 3*l.* 3s., improved and manufactured by the exhibiters; a patent turnip cutter, price 4*l.*, invented by the late James Gardner, of Banbury, and manufactured by the exhibiters (a silver medal was awarded to the exhibiters for this implement at the Northampton Meeting of the Royal Agricultural Society of England); a patent steel oat mill, price 3*l.* 15s.; and a patent bean cutter, price 4*l.*, invented by G. A. Biddell, of Ipswich, improved and manufactured by Ransomes and Sims, of Ipswich; an improved oat and bean crusher, for hand-power, price 4*l.* 10s., improved and manufactured by the exhibiters; an improved oat and bean crusher, price 6*l.* 10s., improved and manufactured by Richmond and Chandler, of Salford; a two-knife chaff engine, price 2*l*. 10s., invented, improved, and manufactured by the exhibiters; a two-knife chaff-engine, price 4*l*. 15s., invented, improved, and manufactured by J. Cornes, of Barbridge (gained the prize of the Royal Agricultural Society of England at the Lewes Meeting 1852, at Gloucester 1853, also at Lincoln 1854); another size 8*l*. 10s.; a chest of emigrant's tools, price 8*l*.; an assortment of farmer's tools, price 50s.; a malt screen, price 1*l*. 15s.; and a gravel screen, price 1*l*. 5s., all improved and manufactured by the exhibiters; an improved dynamometer or draught gauge, price 4*l*. 10s., manufactured by the exhibiters.

Martin Meaden, of Warminster, Wilts.

A light Coburg or family conveyance, price complete 46*l*. 8s.; a light four-wheel dog cart, price complete 48*l*. 14s.; a light Whitechapel cart, price complete 36*l*. 11s.; a light sociable, or open family conveyance, price complete 105*l*.; a light open four-wheel carriage, with moveable head and moveable hind seat, price complete 71*l*. 13s.; a light turndown-seat phaeton, price complete 45*l*.; and a light Brougham, or close family conveyance, price complete 115*s*., all invented and manufactured by the exhibiter.

Williamson Brothers, Canal Iron Works, Kendal, Westmoreland.

(New implement) a six-horse-power vortex turbine, price 40*l*., invented by James Thomson, improved and manufactured by the exhibiters; a three-horse-power fixed steam engine, price 50*l*.; a one-horse gear-work, price 8*l*.; an improved two-horse gear-work, price 16*l*.; a two-horse-power thrashing machine, price 32*l*.; an improved straw shaker, price 6*l*.; a two-horse-power thrashing machine, price 13*l*., or with horse-work complete 28*l*.; a web or brush harrow price 3*l*.; and an improved portable mangle, price 3*l*. 5s., all invented, improved, and manufactured by the exhibiters.

Ransomes & Sims, of Ipswich, Suffolk.

A wrought iron horse hoe, for ridge work, with harrow attached, price £3 6s., invented, improved, and manufactured by the exhibiters; a patent haymaking machine with reverse action, price £16 16s., invented and improved by W. N. Nicholson, of Newark, and manufactured by the exhibiters; an improved iron Suffolk horse drag rake, price £7 10s. (highly commended at the Royal Agricultural Society's meeting at Lincoln, 1854); another size, price £8; an improved Windsor cart fitted with harvest raves, price £17 10s., if without the harvest raves £16; a pony plough with wood beam and handles, price £1 10s.; (new implement) an iron pony plough with one wheel, price £2 2s.; (new implement) a light iron plough with one wheel, price £2 17s. 6d.; a patent trussed beam iron plough with two wheels and skim coulter, price with two wheels £4 12s. 6d., skim coulter 5s. extra, if with steel breast 9s. extra (awarded the prize of £10 and silver medal as the best heavy land plough, and a prize of £10 and silver medal as the best light land plough at the Royal Agricultural Society's meeting at Southampton, and a council medal of the Great Exhibition was awarded to it as made by Busby); a patent iron plough fitted with steel breast, two wheels and skim coulter, price £4 12s. 6d. (awarded the prize at the meeting of the Royal Agricultural Society at Lewes 1852, at Lincoln 1854, and again at Carlisle as the best plough for general purposes); an iron solid beam general purpose plough with two wheels and skim coulter, price £4 12s. 6d.; a light solid beam iron plough with two wheels and skim coulter, price £4 7s. 6d., all invented, improved, and manufactured by the exhibiters; a patent trussed beam iron one-way or turnwrest plough, price £6 17s. 6d., invented by Henry Lowcock, improved and manufactured by the exhibiters (awarded the silver medal at the Royal Agricultural Society's meeting at Southampton 1844, prize of £5 at Shrewsbury 1845, prize of £5 at Exeter 1850, prize of £7 at Lewes 1852, prize of £7 at Gloucester 1853, and the prize at Chelmsford 1856); a patent trussed beam iron plough, price £6 8s. 6d., invented by John Clarke, of Long Sutton, improved and manufactured by the exhibiters (obtained the silver medal at the meeting of the Royal Agricultural Society at Norwich); a moulding or double Tom iron ridging plough, fitted with curved cutters and Norwegian harrows, price £3 10s., with curved cutters £1 extra, Norwegian harrow 10s. extra; and (new implement) a light iron double Tom plough, price £2 10s., invented, improved, and manufactured by the exhibiters; a patent trussed beam iron Archimedian subsoil plough, price £4 12s. 6d., invented by Lord C. Beauclerk, improved and manufactured by the exhibiters (prize at the Royal Agricultural Society's meeting at Chelmsford, 1856); a Cotgreave's patent trenching and subsoil plough, price £10 10s., invented by Robert Cotgreave, improved and manufactured by the exhibiters (awarded the silver medal at Lincoln 1854, at Carlisle 1855, and at Chelmsford 1856); a set of patent trussed iron whippletrees, No. 1, price £1 3s. (awarded a silver medal at the Royal Agricultural Society's meeting at Derby 1843, and at Southampton 1844, at Lewes 1852 commended); an improved Scotch grubber with wheels, price with head wheel 5*l*. 15s. 6d., and with two hind wheels 6*l*. 5s. 6d.; an improved two horse scarifier, price fitted with points 9*l*. 9s.; an improved wrought iron scarifier, cultivator, and grubber, price 16*l*. (prize at the Royal Agricultural Society's meeting at Chelmsford, 1856); a set of light East Anglian seed harrows, price 4*l*. 5s. (awarded a prize at the Royal Agricultural Society's meeting at Chelmsford, 1856); a set of medium East Anglian general purpose harrows, price 4*l*. 10s.; and a set of heavy East Anglian harrows for rough work, price 4*l*. 15s., invented, improved, and manufactured by the exhibiters; an improved vertical barley awner on iron stand, price 6*l*. 6s., invented and improved by Henry Brinsmead, of Ipswich, and manufactured by the exhibiters; a chaff cutter for horse or steam power, price with two knives 15*l*., with three knives 16*l*.; and a chaff cutter for hand or horse power, price 10*l*., invented, improved, and manufactured by the exhibiters; a patent Cam chaff engine, price 5*l*. 5s., invented and improved by G. A. Biddell, of Ipswich, and manufactured by the exhibiters (highly commended at the Royal Agricultural Society's meeting at Lincoln, 1854); three sizes of a chaff cutter, price 3*l*. 10s., 3*l*. 15s., and 4*l*. 4s., invented, improved, and manufactured by the exhibiters; a double action turnip cutter, price 5*l*. 10s., when fitted with wheels and handles 13s. extra; and a single action turnip cutter, price 4*l*. 10s., invented by J. Gardner, of Banbury, improved and manufactured by the exhibiters; a hand turnip cutter, price 1*l*. 12s. 6d., invented, improved, and manufactured by the exhibiters; an improved patent root grater, price 4*l*. 10s., invented by Bushe and Barter, of Lismore, improved and manufactured by the exhibiters; a bruising mill for hand, horse or steam power, price 16*l*. 16s., another size 7*l*. 10s., invented, improved, and manufactured by the exhibiters; a patent universal mill, price 9*l*. 10s., invented by G. A. Biddell, of Ipswich, improved and manufactured by the exhibiters; a patent bean cutter on iron stand for hand power, price 4*l*. (awarded the silver medal of the Royal Agricultural Society at Gloucester, also the silver medal of the Yorkshire Agricultural Society at York in 1853, and a second class medal at the meeting of the Royal Agricultural Improvement Society of Ireland at Killarney in 1853); the same article on wood stand, price 3*l*. 15s.; a patent steel oat mill on iron stand for hand power, price 4*l*.; the same article on wood stand, price 3*l*. 15s.; a patent combined steel mill for beans and oats on iron stand, price 6*l*. 6s.; the same article on wood stand, price 6*l*.; and (new implement) a patent combined bean and oat mill and oilcake breaker, price 7*l*. 10s., all invented by G. A. Biddell, of Ipswich, improved and manufactured by the exhibiters; an oilcake breaker, price 2*l*. 10s.; an improved oilcake breaker, price 5*l*.; an improved winnowing machine, price 10*l*.; a hand power malt mill, price 5*l*.; an improved circular-saw bench, price 30*l*.; (new implement) a circular-saw bench, price 15*l*.; (new implement) a one horse gear with intermediate motion, price 12*l*. 10s.; (new implement) a one horse thrashing machine, price 27*l*. 10s.; a three horse portable thrashing machine fitted with patent straw shakers and four horse cap, price 85*l*.; and a two horse portable thrashing machine, price 42*l*., invented, improved, and manufactured by the exhibiters (awarded the prize at the Royal Agricultural Society's meeting at Gloucester in 1853 as the best two horse thrashing machine, at the Killarney meeting of the Royal Agricultural Improvement Society of Ireland in 1853, at the Armagh meeting in 1854, and again at the Carlow meeting of the same society in 1855, the first prize was awarded to this machine); a patent combined portable thrashing machine with patent drum and iron road wheels, price 105*l*., invented by Henry Brinsmead, of Ipswich, improved and manufactured by the exhibiters; (new implement) a combined portable thrashing and finishing machine on wood wheels, price 130*l*.; a seven horse power portable steam engine, price 215*l*., with heating apparatus 15*l*. extra (the prize of 10*l*. was awarded to this engine at the Royal Agricultural Society's meeting at Lincoln, and at the Royal Agricultural Improvement Society's meeting at Armagh in 1854, and at Carlow in 1855, the prize was also awarded); a ten horse ditto, price 275l.; a five horse ditto, price 190l.; an improved horizontal direct action four horse fixed steam engine, price 150l.; and a ditto eight horse fixed steam engine, price 195l., invented, improved, and manufactured by the exhibiters (a prize of 10l. was awarded to this engine at the Royal Agricultural Society's meeting at Lewes in 1852, and the first prize of 20l. at the Lincoln meeting in 1854, and again at Carlisle in 1855); a grass-cutting machine 22 inches wide, price 6l., invented by E. Budding, of Dursley, improved and manufactured by the exhibiters; a pair of water or feeding troughs, one round and the other oblong, price of round trough holding $8\frac{3}{4}$ gallons 6s., oblong trough holding 12 gallons 9s., invented, improved, and manufactured by the exhibiters; a set of stable fittings, price of hay rack 3l. 3s., manger plain 19s. 6d., ditto enamelled 1l. 10s. 6d., safety tying apparatus 1l. 2s., sieve 13s., invented by J. A. Bruce, of Gwyrch Castle, Ireland, improved and manufactured by the exhibiters; a set (five each) of hog and pig troughs, price from 1s. 9d. to 14s. 3d.; and a pair of circular pig and hog troughs, price of pig trough 10s., hog trough 18s., invented, improved, and manufactured by the exhibiters; a winnowing machine fitted with patent elevator, price of winnowing machine with elevator and weighing machine 25l., invented by Campain, and manufactured by Thos. Luck, of Spalding; a seven horse power portable steam engine, price 215l.; and an iron universal intermediate motion, price 13l. 10s., invented, improved, and manufactured by the exhibiters.

Robert Boby, of Bury St. Edmunds, Suffolk.

A patent corn dressing machine, price 15l.; a large patent corn screen, price 9l.; a small patent corn screen, price 7l.; and a patent corn screen, price 9l., invented by T. C. Bridgeman, of Bury St. Edmunds, improved and manufactured by the exhibiter.

Henry Atwood Thompson, of Lewes, Sussex.

(New implement) a liquid manure distributor and one horse cart combined, price 16l. 10s. (a gold medal and 250 francs were awarded to this implement at Paris, 1856); (new implement) a three tined horse hoe, price 2l. 2s. (awarded a silver medal and 100 francs at Paris, 1856); one of a larger size, 3l. 10s.; (new implement) a patent haymaking machine with reverse action, price 16l. 16s. (awarded the first prize at Paris, 1856); (new implement) a gear box for patent haymaker; (new implement) a horse drag rake for hay, corn, and stubble, price 8l., steeled teeth 10s. extra; another size, 10l. 10s.; (new implement) a one horse model cart, price 14l.; and a portable liquid manure pump, price 3l. 5s., all invented, improved, and manufactured by the exhibiter; a tripod stand for portable pumps, price 17s. 6d., manufactured by the exhibiter; a portable pump on tripod stand with flexible hose, price 16l. 16s. 6d.; and an improved trussed field gate, price 2l. 8s., invented and manufactured by the exhibiter; an improved trussed entrance gate, price 4l. 10s.; another size, 5l. 15s., manufactured by the exhibiter; an "economic" drainage level, price 1l. 18s. (awarded a silver medal at Lincoln, in 1854, and a gold medal and 100 francs at Paris, in 1856), and an improved ditto, price 2l. 15s., invented and manufactured by the exhibiter; a prize "telescope" drainage level, price 5l. 10s., manufactured by the exhibiter (awarded a silver medal at Gloucester in 1853, and a gold medal at Paris in 1856); a workman's bevel for laying drain pipes, price 18s. 6d., invented and manufactured by the exhibiter; a graduated levelling staff with sliding vane, price 12s. 6d., manufactured by the exhibiter.

E. R. and F. Turner, of St. Peter's Iron Works, Ipswich, Suffolk.

A roller mill for crushing linseed, oats, malt, barley, &c., price 11l. 11s., invented by Bond, Turner, and Hurwood, of Ipswich, improved and manufactured by the exhibiters (obtained the prizes at the Royal Agricultural Society's meetings at Norwich, 1849, Gloucester, 1853, Lincoln, 1854, Carlisle, 1855); several specimens of a roller mill for crushing linseed, oats, malt, barley, &c., price from 4l. 15s. to 24l. with extras; a linseed and corn crushing mill, price 42l.; a patent combined crushing and grinding mill, price 28l.; a grinding mill for all kinds of grain, price 52l.; a chaff cutter, price 11l. 11s.; an oilcake breaker for sheep, price 3l. 10s.; a ditto for beasts, price 3l. 10s.; a circular-saw bench, price 18l.; a four horse power fixed steam engine, price 120l.; and a two horse power steam engine, price 90l., all invented, improved, and manufactured by the exhibiters.

Tuxford and Sons, of Boston, and Skirbeck Iron Works, near Boston, Lincolnshire.

Mem.—All the articles on this stand were invented by Weston Tuxford, of Boston, and manufactured by the exhibiters.

An eight horse power patent portable steam engine, with vertical cylinder, safety spark trap to chimney, an iron house for enclosing the engine, and an improved boiler, with flues and tubes combined, price, on wood travelling wheels, 255l., iron do., 250l. (at the last trials of the Royal Agricultural Society this engine took the first prize); a seven horse power patent portable steam engine, with ditto, price, on wood travelling wheels, 235l.; on iron do., 230l.; a six horse power patent portable steam engine, with ditto, price, on wood travelling wheels, 220l., on iron do., 215l. (these engines were selected at the Great Exposition of All Nations, by the Commissioners of the French and Prussian Governments, as standard models, for the Museum of Arts and Trades in Paris and for the Agricultural Museum of Magdeburg); a five horse power portable steam engine, with ditto, price, on wood travelling wheels, 200l., on iron do., 195l.; a four horse power patent portable steam engine, with ditto, price, on wood travelling wheels, 185l., on iron do., 180l.; an eight horse power fixed steam engine, with vertical cylinder, price 210l.; a six horse power fixed steam engine, with vertical cylinder, price 165l.; a four horse power fixed steam engine, with oscillating cylinder, price 110l.; a patent combined thrashing, straw shaking, riddling, winnowing, chaff separating, and barley horning machine, with elevators to sack the grain at a height convenient for a man to back without help, price, on wood travelling wheels, 100l., on iron do., 95l. (at the last trial of the Royal Agricultural Society, the operations of the straw shaker and the barley horning apparatus of this machine were pronounced perfect by the judges); a patent combined thrashing, shaking, and dressing machine, with an extra dressing apparatus, for finishing in one operation for market, price, on wood travelling wheels, 120l., on iron do., 115l.; an improved circular-saw table, with parallel fence plate and binding rollers, rails and horses, drag motion and drawing pulley, price, with a 30-inch saw, 42l., without rails and horses, binding rollers, and drag motion, 20l., with self acting motions, 75l.; another improved circular-saw table, price 14l.; and a ten horse power patent portable steam engine, with two vertical cylinders, safety spark trap to chimney, an iron house for enclosing the engine, and an improved boiler, with flues and tubes combined, price, on wood travelling wheels, 295l., on iron ditto, 290l.

N.B.—$2\frac{1}{2}$ per cent. discount for cash on all the above prices.

George Bell, of Inchmichael, near Errol, Perthshire.

A reaping machine, price 40l., invented by the Rev. Patrick Bell, of Carmylie, improved by the exhibiter, and manufactured by Messrs. John Gray and Co., of Uddingston, by Glasgow (was awarded the first prize of 20l., at the Pusey trial, succeeding the Gloucester show of the Royal Agricultural Society, in 1853).

Richard Coleman, of Chelmsford, Essex.

Three sizes of a patent expanding harrow, price from 4l. to 8l. 10s. and several sizes of a patent drag harrow, cultivator, or scarifier, price from 6l. 10s. to 14l. 10s. (two prizes of 3l. each were awarded to this implement at the Chelmsford meeting, 1856), all invented, improved, and manufactured by the exhibiter; (new implement) a patent steam cultivator, price 35l., invented and manufactured by the exhibiter; a patent potato digger, price 18l., invented by Mr. John Hanson, of Doagh, improved and manufactured by the exhibiter.

Alfred Eddington, of Springfield, near Chelmsford, Essex.

(New implement) a pair of windlasses and ropes, for steam cultivation, price 350l., invented by the exhibiter, and manufactured by George Wood and Son, of Chelmsford; two eight horse portable engines, price 255l., invented and manufactured by Clayton, Shuttleworth, and Co., of Lincoln; a steam plough, price 80l., invented by J. Fowler, Jun., of Havering, and manufactured by Ransomes and Sims, of Ipswich; (new implement) a windlass for draining, price 125*l.*, invented by the exhibiter, and manufactured by George Wood and Son, of Chelmsford; and a draining plough, price 100*l.*, invented by J. Fowler, Jun., of Havering, and manufactured by Fowler and Fry, of Bristol.

R. FORSHAW & Co., of Liverpool, Lancashire.

A cart and cattle weighing machine, to indicate from 1 lb. to 2 tons, price 19*l.* 10s.; a sheep weighing machine, price 7*l.* 10s.; and an improved sack weighing machine, price 5*l.* 5s., invented, improved, and manufactured by the exhibiters; a sack weighing machine, to indicate from ¼ lb. to 4 cwt., price 4*l.* 4s., invented by Fairbank, of America, improved and manufactured by the exhibiters; (new implement) a four horse power bone cutting or rasping mill, price 66*l.*, invented and manufactured by Robt. Burns, of Liverpool; two sizes of a hay and straw cutter, price 2s. 5s. and 4*l.* 10s., manufactured by the exhibiters; a combined corn mill and flour dressing machine, price 7*l.* 10s., invented, improved, and manufactured by the exhibiters; an oat and bean bruiser, price 6*l.* 10s., manufactured by the exhibiters; and a Gilbert's patent sack holder, price 1*l.* 3s., invented by Gilbert, of London.

EDWARD HAMMOND BENTALL, of Heybridge, near Maldon, Essex.

MEM.—All the articles on this stand were invented and manufactured by the exhibiters, except otherwise described.

A patent ridging plough, price 2*l.* 12s. 6d.; a patent single ridge hoe, price 2*l.* 2s.; a patent double ridge hoe, price 3*l.* 13s. 6d.; three sizes of a patent broadshare, prices 2*l.* 7s. 6d., 4*l*, and 4*l.* 10s.; a patent subsoil plough, price 3*l.* 10s.; three sizes of a patent broadshare and subsoil plough, prices 6*l.* 6s., 7*l.* 17s. 6d., and 8*l.* 18s. 6d.; a patent broadshare and subsoil plough, price 6*l.* 16s. 6d. (the old original, which took the 5*l.* prize at Exeter, two medals at the 1851 Exhibition as a cultivator and subsoil plough, 5*l.* prize at Lincoln, and the 5*l.* prize at the Chelmsford show as a subsoil plough); another size, price 8*l.* 18s. 6d.; a patent broadshare and scarifier, price 7*l.* 17s. 6d. (obtained three prizes of 8*l* at the Chelmsford meeting); two patent broadshares, price 5*l.* 5s. and 5*l.* 15s. 6d.; a 12 inch broadshare prong, price 1s. 6d., and a 15 inch broadshare prong, price 1s. 10d., manufactured by the exhibiter; a patent plough, price 3*l.* 10s. (obtained two prizes of 6*l.* at the Chelmsford meeting); another size, price 2*l.* 13s. 6d.; a quantity of E.H.B. and E.H A. shares, price 6s. 6d. per dozen, manufactured by the exhibiter; a set of patent light seed harrows, price 3*l.* 3s.; a set of patent light harrows, price 3*l.* 15s. (obtained a prize of 2*l.* at Chelmsford); a set of patent medium harrows, price 4*l.* 10s.; a set of patent heavy or drag harrows, price 5*l.* 10s.; a chaff cutter, price 2*l.* 12s. 6d., manufactured by the exhibiter; two patent root pulpers, price 8*l.* 8s.; other sizes, price 6*l.* 6s. and 5*l.* 5s.; and a round feeding trough, price 7s., manufactured by the exhibiter.

EDWARD DOWLING, of 2, Queen-street, Holborn, London.

(New implement) a 3 cwt. patent lever weighing machine, on sack truck, price 3*l.* 10s., and a 2 cwt. patent lever weighing machine, price 3*l.*, invented and manufactured by the exhibiter; a weighing machine, price 6*l.* 10s., manufactured by the exhibiter; a patent weighing machine, price 5*l.*, invented and manufactured by Day and Millward; another size, price 3*l.* 3s.; a high single weighing machine, price 3*l.*, and a low single ditto, price 2*l.* 5s., manufactured by the exhibiter; a small double weighing machine, price 4*l.*, invented and manufactured by the exhibiter; an iron plate weighing machine, price 3*l.* 10s.; a dwarf ditto, price 3*l.*; a chaff cutter, price 4*l.* 5s., and a double weighing machine, price 4*l.* 10s., manufactured by the exhibiter; (new implement) a weighing machine on sack truck (fixed), price 5*l.*, and (new implement) a patent lever weighing machine for hay, price 4*l.*, invented and manufactured by the exhibiter; a dwarf weighing machine, for hay and roots, price 2*l.* 5s.; a family scale machine and weights, registered, price 1*l.* 1s.; a weighing machine with tin scale, price 16s.; a hay weighing machine, price 3*l.* 5s.; an improved weighing machine, price 3*l.* 10s.; a base coin detector, price 1s. 6d.; a wheat mill, with flour dresser attached, price 6*l.* 10s.; a sack truck, price 10s.; a flour scale machine, price 1*l.* 1s., and a parcel of steelyards, price 2s. and upwards, manufactured by the exhibiter.

BENJAMIN FOWLER, of Whitefriars-street, Fleet-street, London.

Several specimens and sizes of a cast iron bored pump, price from 1*l.* 7s. 6d., to 8*l.*; several sizes and specimens of a wrought iron portable pump, price from 1*l.* 18s., to 3*l.* 10s.; a copper portable pump, price 4*l.* 5s., and two wrought iron pumps, price of each 2*l.* 5s., a flexible india rubber suction hose, price 2*l.* 10s. 6d., a ditto, price 2*l.* 6s. 9d.; a portable water tank on wheels, price 3*l.*, manufactured by the exhibiter; five sizes of (new implement) a Holman's double barrel portable patent force and irrigating pump, price 10*l.*, 14*l.*, 15*l.*, 20*l.*, and 25*l.*, invented by Stephen Holman of Deptford, improved and manufactured by B. Fowler and Co.; a vulcanized wired India rubber suction hose, price 2*l.* 18s., and 3*l.* 9s. 3d.; a copper branch pipe, price 1*l.* 12s. 6d., manufactured by B. Fowler and Co.; a coil of canvas delivery hose, price 2s. and 2s. 3d. per yard; a small portable garden force pump, price 4*l.* 15s., a larger size, 5*l.* 15s., improved and manufactured by B. Fowler and Co.; a vulcanized India rubber wired suction hose, price 1*l.* 15s.; a cast iron force pump (portable), price 6*l.* 10s., improved and manufactured by B. Fowler and Co.; (new implement) a Holman's patent double action pump, for steam power, price 16*l.* 10s., another size 25*l.*, invented by Stephen Holman, of Deptford, improved and manufactured by B. Fowler and Co.; three specimens of brass lift and force pumps, on planks, price from 4*l.* 14s. 6d. to 8*l.* 15s., improved and manufactured by B. Fowler and Co.; (new implement) a new patent combined cup valve force pump, price 8*l.*, smaller size, 6*l.* 10s., invented by Stephen Holman, of Deptford, manufactured by B. Fowler and Co.; a garden watering engine (portable), price 2*l.* 10s., manufactured by B. Fowler and Co.; an improved hydraulic ram, price 12*l.*, improved and manufactured by B. Fowler and Co.; an improved sluice screw slide valve, price 3*l.* 3s.; a coil of gutta percha tubing, for watering gardens, &c., price 4d. per foot, manufactured by the Gutta Percha Company, of London; a bundle of galvanized iron pails, price 3s. 6d. and 2s. 6d. each; a bundle of galvanized iron measures, price 6s. each; a throttle valve, for heating apparatus in forcing houses, &c., price 15s., and a small cast iron conservatory pump, price 2*l.*, manufactured by B. Fowler and Co.

GREENING & Co., of the Victoria Iron Works, 81, Oxford-road, Manchester.

Several specimens of a patent fence, proof against horses, cattle, sheep, rabbits, hares, poultry, &c., price from 1s. to 2s. 6d. per running yard; a patent ornamental garden fence, price 2s. 6d. per yard; an hexagonal pattern galvanized rabbit proof wire net, price 1s. per yard; poultry nets same description and price; an economical pattern wrought iron field gate, price, with fittings, 1*l.* 1s. each; a pair of fine wrought iron carriage gates, price, with fittings for stone piers, 6*l.* 16s, with handsome cast iron ditto 8*l.* 10s. per pair; a best wrought iron sheep hurdle, price 2s. per running yard; a best wrought iron cattle hurdle, price (at works), with bolts and nuts for fixing, price 2s. 9d. per running yard; an ornamental fine wrought iron garden hurdle, price 3s. per running yard; an extra strong garden hurdle, price 3s. 6d. per yard; a circular tree guard, price 12s. 6d.; a set of wire plant guards (patent machine made), price 1s., 2s., and 7s. 6d. each; an ornamental garden border (patent machine made), price 9d. per lineal yard; a galvanized poultry coop, price 2s. 6d. each; and a strained wire fence, price (cattle and sheep proof) 1s. 2d. per yard, manufactured by the exhibiters.

JAMES LAMB HANCOCK, of 16, Winchester-place, Pentonville, London.

(New implement) an improved patent chaff cutter, price 10*l.* 10s., and three sizes of an improved washing machine, price 1*l.* 10s., 3*l.* 3s., and 5*l.* 5s., invented, improved, and manufactured by the exhibiter.

HARE & Co., of 31, Essex-street, Strand, London, W.C.

Mabson's anti-smut powder, price 10s. per doz. packets, invented and manufactured by William Mabson, of Yarmouth; a sulpher sprinkler, price 2s. 6d., invented and manufactured by Ouin and Franc, of Paris; a vegetable peeler, price 1s. 6d., invented by Mr. Appleton, of Sheffield, and manufactured by Oliver Long, of London; and Wright's patent safety Tap, for beer, wine, &c., price 2s. 6d., invented by

Samuel Wright, of Halsted, and manufactured by Sudbury and Co., of Halsted.

S. & E. Ransome & Co., of 31, Essex-street, Strand, London, W.C.

Long's specific, price 6s. per gallon; Long's preservative, or lamb dressing, price 2s. 8d. per gallon, and Long's foot rot lotion, price 1*l*. 10s. per dozen pints, invented by Joseph Long, of London, improved and manufactured by Barry Brothers, of Meriton's Wharf, London; a number of pouring cans suitable for sheep dressing, price 2s. 6d. each, invented by Joseph Long, of London, and manufactured by any tinman; an improved wrought iron sheep dressing fork, price 17s. 6d., invented and manufactured by Henry Inskip, of Potton; there were several specimens of sheepskin with fleece, showing the extraordinary improvement in the growth of the fleece, resulting from the beneficial effect upon the general health of the animal which follows the frequent application of Long's non-poisonous sheep dressings; three sizes of a patent press knife and fork cleaner, price 16s., 18s., and 1*l*. 3s., invented and manufactured by Oliver Long, of London; a Nye's sausage-making machine, price 1*l*. 10s., invented and manufactured by Sam. Nye, of London; a self-acting alarm whistle for steam boilers, price 3*l*. 10s., invented by William O. Johnston, of Leeds, and manufactured by Henry Watson, of Newcastle; a patent gauge for indicating the pressure of steam, water, gas, &c., price 3*l*. 6s., invented and manufactured by Gwynne and Co., of London; a patent earthern filter in wicker case, price 1*l*. 1s., invented and manufactured by the exhibiters; an Anthony's patent American churn, price 2*l*. 2s. to make 6lbs., and 2*l*. 7s. 6d. to make 10lbs., invented by C. E. Anthony, of America, and manufactured by Burgess and Key, of London, (three medals have been awarded to this churn); a patent cradle washing machine, price 3*l*. 13s. 6d., invented and manufactured by Burgess and Key, London.

J. and L. Horsfield, Engineers and Iron founders, of Bank Foundry, Leeds, Yorkshire.

A steam cultivator, price 380*l*., invented and manufactured by the exhibiters.

Huxham and Brown, of Exeter, Devonshire.

A millstone for the runner, price 11*l*. 10s., and a millstone for the butstone or layer, price 11*l*., manufactured by the exhibiters.

Philip Johnston, of 292, Oxford-street, London.

A churn, price 1*l*. 10s, invented, improved, and manufactured by the exhibiter; an assortment of churns, from 15s. to 2*l*. 10s. 6d. each; and a set of churn requisites, 6 milk pails 6s. each, 3 pair of milk yokes complete 12s.

Joseph Lee, of Wolverhampton, Staffordshire.

A portable engine, price, with self-acting motion 235*l*., without 210*l*., invented, improved, and manufactured by the exhibiter.

J. Marychurch and Son, of Haverfordwest, Pembrokeshire.

A patent self acting horse rake, price 8*l*. 10s., invented and improved by William Marychurch, of Haverfordwest, and manufactured by the exhibiters (it received the gold medal and first prize of the Paris Exhibition, and the silver medal, with special award of the West of England Society); a corn rick stand pillar, price 5s., manufactured by the exhibiters; a curd crushing machine, price 15s., improved and manufactured by the exhibiters; and a wrought iron barrow wheel, price 3s. 6d., manufactured by the exhibiters.

Oldham and Booth, of Kingston-upon-Hull, Yorkshire.

A six-horse strong and powerful bone mill, to be driven by steam or other power, price 170*l*., and a four-horse strong powerful bone mill, to be driven by steam or other power, price 85*l*., improved and manufactured by the exhibiters; (new implement) a four-horse strong powerful bone dust mill, price 90*l*.; and (new implement) a two-horse power bone mill, to be driven by steam or other power, price 45*l*., invented, improved, and manufactured by the exhibiters.

Thomas Pain, of Laverstock Hall, near Salisbury, Wilts.

(New implement) an iron turf paring plough, price 4*l*. 10s., invented by exhibiter, and manufactured by Brown and May, of Devizes, Wilts.

T. Milford and Son, of Thorverton, near Collumpton, Devon.

An improved one-horse cart for general farm, road, and harvest purposes, price 15*l*., invented, improved, and manufactured by the exhibiters (awarded the prize of 5*l*. by the Royal Agricultural Society at Gloucester, 1853; a silver medal by the same society at Lincoln, 1854; and the prize of 3*l*. by the Bath and West of England Society at Tiverton); (new implement) an improved model one-horse cart for general farm, road, and harvest purposes, price 15*l*. 15s., invented by Frank P. Milford, of Thorverton, and manufactured by the exhibiters (awarded the prize of 3*l*. by the Bath and West of England Society at Yeovil, 1856); (new implement) a cranked axle one-horse cart for general purposes, price 15*l*. 10s., invented and manufactured by the exhibiters; an improved Taunton, Plymouth, Bath, and Tiverton prize two-horse waggon, price 25*l*. (awarded the prize of 5*l*. by the Bath and West of England Society at Taunton, 1852; prize of 4*l*. at Plymouth, 1853; prize of 3*l*. at Bath, 1854; prize of 3*l*. at Tiverton, 1855; also commended at Yeovil, 1856); and an improved stout plank sided two-horse waggon, price 31*l*. 10s., invented, improved, and manufactured by the exhibiters.

Priest and Woolnough, of Kingston-on-Thames, Surrey.

A drill for general purposes, price 42*l*.; and two drills for turnips and manure, price 26*l*. 5s. and 18*l*. 5s., improved and manufactured by the exhibitors; a broadcast manure distributor, price 18*l*., invented and manufactured by the exhibiters; a thirteen row lever corn drill, price 29*l*. 15s., and a ten row lever corn drill, price 25*l*. 15s., improved and manufactured by the exhibiters; a fore carriage steerage, price 4*l*. 10s., manufactured by the exhibiters; a patent horse hoe, price 17*l*. 10s., invented, improved, and manufactured by the exhibiters; and a three-horse power bolting thrashing machine, price 45*l*., invented and manufactured by the exhibiters.

J. Rawlings, of Tisbury, near Hindon, Wilts.

A small horse gear for chaff cutting, price £12, invented, improved, and manufactured by the exhibiter; a back action hay machine, price £9, and a horse rake, price £6 10s., improved and manufactured by the exhibiter; a double cheese press, price £5, invented by Robert Bowran, of Semley, improved and manufactured by the exhibiter; a curd mill, price £1 10s., improved and manufactured by the exhibiter; and a two knife chaff cutter, price £4 10s., manufactured by Richmond and Co., of Salford, near Manchester.

Thomas Richards, of Wincanton, Somersetshire.

(New invention) a three feet circular fronted cooking range, price £10; ditto three feet six inch ditto, price £14; ditto four feet ditto, price £16; and ditto four feet six inch ditto, price £21, invented and improved by the exhibiter, manufactured by the Coalbrookdale Company, of Coalbrookdale, Salop.

Samuel Rowsell, of Buckland St. Mary, near Chard, Somersetshire.

An American iron pointed horse rake, for collecting hay, price £1 8s. (to this machine the judges of the West of England Agricultural Society specially awarded three prizes, viz., £1 at Bath, 1854; 10s. at Tiverton, 1855; and £1 at Yeovil, 1856); and an American iron pointed horse rake, for collecting hay and for raking corn, price £2, invented, improved, and manufactured by the exhibiter; a field gate, price £1 2s., invented by Mr. R. Pym, of Buckland St. Mary, improved and manufactured by the exhibiter (gained the West of England Society's prize of £1 at Yeovil, 1856); a machine for making stems of picks, rakes, &c., price 8s., invented, improved, and manufactured by the exhibiter; an American washing board, price 2s. 6d., invented in America, improved and manufactured by the exhibiter.

F. Savage, of King's Lynn, Norfolk.

A root pulper, price £5 5s., invented by Thomas Rose, of Hilgay Fen, manufactured by the exhibiter; an improved combined portable thrashing machine, price £105, improved and manufactured by the exhibiter.

Arthur Silcock, of Chippenham, Wilts.

(New implement) an improved hay making machine, price £12 10s.; (new implement) a double action hay making machine, price £14; (new implement) a one-horse cart, price

£16; (new implement) an improved lever horse rake, price £8, invented, improved, and manufactured by the exhibiter; and a single cheese press with double lever, price £3, and a double cheese press, with double lever, price £5, improved and manufactured by the exhibiter; a patent oil cake crusher, price £5, invented and manufactured by the exhibiter; a patent turf and stubble paring plough, price £6, invented by Mr. Glover, of Thrussington, improved and manufactured by the exhibiter (gained the prize at the exhibition of the Bath and West of England Agricultural Society in 1854); a patent combined oat and bean crusher, price £6 10s.; invented by G. A. Biddell, of Ipswich, improved and manufactured by Ransomes and Sims, of Ipswich; a chaff cutting machine, price £7 10s., invented, improved, and manufactured by the exhibiter; a pair of improved patent iron drags, price £5; and a pair of improved patent iron harrows, price £3 10s., improved and manufactured by the exhibiter; a patent iron plough, price £5 6s., invented and manufactured by Messrs. J. and F. Howard, of Bedford; and a patent American floating ball washing machine, price £6, invented by Christopher Hollingsworth, of Indiana, improved and manufactured by B. Samuelson, of Banbury.

JOHN WHITEHEAD, of Preston, Lancashire.

A drain pipe and tile machine, price 21*l*.—(prizes have been awarded to this machine at the Royal Agricultural Society's meetings, viz., at York in 1848 (£20), at Norwich in 1849 (£20), at Exeter in 1850 (commendations), at the Great Exhibition in 1851 (prize medal), [was not exhibited in 1852], at the Royal Agricultural Society's meeting at Gloucester in 1853 (£10), at Lincoln in 1854 (prize medals), at Carlisle in 1855 (£5), at the Universal Exhibition of Paris in 1855 (first-class medal), at Chelmsford in 1856 (first prize), besides a number of prizes at local meetings;—a smaller size 14*l*. 10s.; a double box drain pipe and tile machine, price 28*l*.; a double box steam or horse power drain pipe and tile machine, price 33*l*. 5s.; an improved brick pressing machine, price 16*l*. 16s.; an economic chaff engine, price 2*l*. 10s.; a turnip cutter, price 2*l*. 10s.; a combined wringing and mangling machine, price 3*l*. 10s.; a mangling and wringing machine, and washing machine combined, price 6*l*. 10s.; and several rolls of iron wire, and galvanized iron wire game-proof netting, prices per lineal yard of the wire from 3d. to 1s. 1d., all invented, improved, and manufactured by the exhibiter.

HUGHES and SONS, of Dover-road, London.

A four-feet French runner millstone, for grinding corn, price 15*l*; a four-feet French bedstone, price 14*l*. and 12*l*.; a 16-inch flour cylinder, price 6*l*., an iron proving staff, price 3*l*. 5s.; cast-steel mill bills, for dressing millstones, price 1s. per lb.; and a mill bill thrift, price 2s. 6d., all improved and manufactured by the exhibiters.

CHARLES and EDWIN EVANS, of Sherston, near Malmesbury, Wiltshire.

A one-row mangel and turnip drill, price 7*l*., improved and manufactured by the exhibiters; a five-row corn drill, price 10*l*., invented by Thomas Evans and Sons, of Sherston, Wiltshire, and manufactured by the exhibiters; a farmer's paddle, price 2s. 6d.; (new implement) a patent paring plough, price 5*l*.; and the "patent paring plough" converted into a plough for ordinary use, price 5*l*., all invented and manufactured by William Evans, of Sherston, Wilts.

JAMES SMYTH and SONS, of Peasenhall, near Yoxford, Suffolk, and Witham, Essex.

A patent small occupation lever corn drill, price 16*l*. (received a prize of 5*l*. at the Royal Agricultural Society's meeting at Gloucester 1853, also 5*l*. at the Lincoln meeting 1854); a patent nine-row lever corn drill, price 23*l*. 18s. 6d.; a patent ten-row ditto, price 25*l*. 5s.; a patent eleven-row lever corn and seed drill, price 27*l*. 10s. (received a prize of 5*l*. at the Royal Agricultural Society's meeting at Derby 1843); a patent twelve-row Suffolk ditto, price 28*l*. 10s.; a patent thirteen-row Suffolk ditto, price 30*l*. 5s.; a patent fourteen-row Suffolk ditto, price 31*l*. 5s.; a patent fifteen-row Suffolk ditto, price 32*l*. 10s.; a patent thirteen-row Suffolk ditto, with two to add to make fifteen, price 34*l*. 15s.; a patent two-row ridge, or three-row broad work, turnip, or mangel-wurzel seed and manure drill, price 17*l*. 10s. (a prize of 10*l*. and a silver medal were awarded to this drill at the Royal Agricultural Society's show at Southampton, 1844); a patent four or five-row turnip and mangel-wurzel seed and manure drill, price 28*l*.; a patent general purpose drill, price 40*l*. (a prize of 10*l*. was awarded to this drill at the Royal Agricultural Society's show at Liverpool, 1841); a patent manure distributor, price 20*l*.; and a patent clover and ryegrass sowing machine, price 13*l*., invented, improved, and manufactured by the exhibiters.

BARNABAS URRY, of the Vectis Works, Newport, Isle of Wight, Hampshire.

A fifteen-coulter 7-feet corn, turnip, mangel, and manure drilling machine, price £60, improved and manufactured by the exhibiters; a four-horse power portable horse works, price £25 10s., invented and manufactured by the exhibiter; a portable thrashing barn works, price £35, invented, improved, and manufactured by the exhibiter; a horse rake, price £6 15s., improved and manufactured by the exhibiter; (new implement) a patent gorse machine, price £30, with cutter gearing attached £37, invented by John Hardley, of Shide, Isle of Wight, and manufactured by the exhibiter; a malt gritter and grain crusher, price £25, invented and manufactured by the exhibiter; a winnowing and riddling machine, price £10 10s.; a strong portable grinding mill, for mealing barley, price with joints £30; a Tennant's grubber, price £7 10s.; a durable iron liquid manure pump, price £4; a wrought-iron expanding horse hoe, price £3 15s.; and a barley hummelling machine, price £4 4s., all improved and manufactured by the exhibiter.

ROBERT LANE, of Cirencester, Gloucestershire.

A registered oil or linseed cake-breaking machine, price £4; a registered prize cake-breaking machine, price £4 7s.; another size £4 10s., all invented, improved, and manufactured by the exhibiter; a one-horse gear, suitable for driving small machines, price £8 8s.; and a two-horse gear, price £12 12s., improved and manufactured by the exhibiter; two sizes of a chaff machine, price £7 and £10, invented, improved, and manufactured by Richmond and Chandler, of Manchester; a small chaff cutter, price £3 10s.; and a chaff cutter, with rising mouth-piece and roller, price £4, manufactured by the exhibiter; a chaff cutter, on an improved system, price £5 5s., invented, improved, and manufactured by the exhibiters; a registered haymaking machine, price £13 13s., invented, improved, and manufactured by Lloyd of Lynham: an improved patent one-horse cart, for agricultural purposes, price £14, improved and manufactured by the exhibiter; (new implement) a patent skim plough, price £5 5s., invented and manufactured by Mr. Evens, of Shearston; a new patent expanding hoe, price 14s.; and a number of gentlemen's paddles, price 3s. each, invented, improved, and manufactured by the exhibiter; a number of Parkes's cast-steel digging and other forks, varying in price from 4s. each, invented and manufactured by Parks, of Birmingham; a patent root mincer or pulper, price £5 5s., invented and manufactured by E. H. Bentall, of Heybridge; and a Phillips's patent root pulper, price £6 10s., invented by Phillips, and manufactured by J. Woods and Son, of Stowmarket.

SAMUEL WOODBOURNE, of Liss, near Petersfield, Southampton.

(New implement) a winnowing machine, price £11; and (new implement) a horse rake, price £6 10s., invented, improved, and manufactured by the exhibiter.

W. H. SMITH and Co., of Sleaford, Lincolnshire.

A portable seven-horse-power steam engine, price £200; and a combined thrashing machine, price £90, improved by W. H. Smith, of Sleaford, and manufactured by the exhibiters.

GEORGE PARSONS, of Martock, Somersetshire.

A seven-horse-power portable steam engine, price £220; and a portable combined thrashing, straw shaking, and winnowing machine, price £85, patent beaters £3, and apparatus for preparing corn for market £10 extra, invented, improved, and manufactured by the exhibiter.

WILLIAM PROCTOR STANLEY, of Peterborough, Northamptonshire.

A registered roller mill, for crushing linseed, oats, barley, malt, and splitting beans, price £12 (prizes were awarded to this mill at all the Royal Agricultural Society's shows where prizes have been competed for since 1848, also a medal at the Great Exhibition of 1851, a silver medal and 300 francs from the Paris Exposition 1855, also the first prize at Peterborough 1856 and seven preceding years, and every local show in the country); another size £8; a Cambridge's patent roller clod crusher, with exhibiter's patent scrapers. price, according to size, £10 10s., £11 11s., £12, £14 10s.; (new implement) a new turnip and mangel wurzel drill and horse hoe combined, price, three rows, £10 (awarded a prize at the Peterborough Agricultural Show 1856); (new implement) a new hand sack barrow and sack raiser, price £3 10s.; and a farmer's portable steam cooking apparatus, for cooking linseed, hay, chaff, and roots, price £17 10s. (a prize of 300 francs and a gold medal were awarded to this implement at the Paris Exposition 1855), all invented, improved, and manufactured by the exhibiter.

JOHN CARTWRIGHT, of Shrewsbury, Salop.

(New implement) a patent self-relieving chain harrow, two-horse power, price £5 10s ; and a ditto, one-horse power, price £3 15s., invented, improved, and manufactured by the exhibiter.

GEORGE MILFORD, of Thorverton, near Collumpton, Devon.

(New implement) a two-horse waggon, price £22 (received the prize of the Bath and West of England Society at Yeovil, 1856) ; (new implement) another lighter kind, price £21 ; and (new implement) a one-horse cart, price £13, invented, improved, and manufactured by the exhibiter.

THOMAS GIBBS and Co., the Seedsmen to the Royal Agricultural Society of England, of Halfmoon-street, Piccadilly, London.

A collection of dried specimens of permanent grasses, containing all the most useful and valuable varieties for laying down land to permanent meadows and pastures; a collection of specimens of wheats, barleys, oats, &c., &c., in the ear, including all the varieties in general cultivation in England; a collection of general agricultural and other seeds, including carrots, parsnips, mangel-wurzels, swedes, hybrids, and other turnips, clovers, sainfoin, lucerne, peas, beans, and other seeds; and a collection of roots of Orange Globe and other mangel-wurzels, including Yellow or Orange Globe, Long Red, Red Globe, and Long Yellow.

HENRY BRIDGES, of 406, Oxford-street, London, W.

A case containing a variety of new patterns of butter prints, &c., for dairy use, cut in a superior manner, and varying in price from 6d. to 2s. 6d. each; also patterns of the same cut in box wood, and including crests, &c., from 2s. to 4s. 6d. each.

PETER LAWSON and SON, of Edinburgh and London.

Seeds, roots, &c., &c.

HENRY JOHN HALL, of Woolwich Common, Kent.

An artificial manure, price, exclusive of sacks, £5, invented by Horatio Beaumont Binns, and manufactured by Hall and Co., of Copenhagen Wharf, Limehouse.

JAMES TREE, of 22, Charlotte-street, Blackfriars-road, Surrey.

A cattle gauge and key to the weighing machine, price 7s. 6d. to 16s. 6d. each, and a cattle gauge, adapted for any market, price, with book of instruction, from 8s. 6d. to £1 1s. each, invented by John Ewart, Esq., of Newcastle-on-Tyne, and manufactured by the exhibiter; a farmer's slide-rule and cattle gauge, price from 12s. 6d. to £1 5s. each, invented by John Ewart, Esq., of Newcastle-on-Tyne; a circular cattle gauge, price £1 5s., invented by John Ewart, Esq,, of Newcastle-on-Tyne, and manufactured by the exhibiter; a beam draining level, price £4 10s, invented by W. B. Webster, of Southampton, and manufactured by the exhibiter.

WILLIAM BULLOCK WEBSTER, of Grove Castle, near Neath, Glamorganshire.

Models, showing that the most useful and economical mode of erecting farm buildings is by adopting, as a principle, sheds eighteen feet wide, and such length as may be required: the models show that these sheds are convertible into any buildings that may be required in carrying out an improved system of agriculture.

JAMES AUSTIN, of Millisle, near Donaghadu, County Down.

(New implement) a model of Austin's patent locomotive steam plough, price £250, invented by the exhibiter, and manufactured by Alex. Chaplin and Co., of Glasgow.

LANCASHIRE MANURE COMPANY, Widnes Bone Works, Warrington, Lancashire.

Samples of manures, &c.

ISAAC WRIGHT, of Great Bentley, near Colchester, Essex.

Specimens of grass seeds and agricultural roots.

W. C. SPOONER, for SPOONER and BAILEY, of Eling, near Southampton.

Samples of oilcakes of various countries, guano, and other manures, both in the raw and manufactured state.

JOSEPH THORLEY, of 77, Newgate-street, London, and 115, High-street, Hull, Yorkshire.

A case containing 468 packages of food for cattle, each package one feed, price £2 16s., invented and manufactured by the exhibiter.

NOAH WEST, of 104, East-street, Manchester-square, London.

(New implement) a model of a reaping machine, price, 3 feet cut £15, 5 feet cut £25, invented and manufactured by the exhibiter,

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THE MESSRS. HARDY, AND THICK AND THIN SEEDING.

SIR,—I have thought perhaps yourself and the readers of your widely circulated journal would have no objection to hear something of the Messrs. Hardy and of the progress they and others are making in thin seeding; and, therefore, as I myself also am a thin seeder, and consequently inquire into the doings of most others who are so likewise, I now sit down purposely to pen you a letter, for which I hope you will find a corner.

I state *in limine* that I myself am a thin seeder, in order that the readers of your journal, who may read what I write, may the more closely scrutinize it; and in doing this, should they in any matter discover that I am a too partial advocate, I hope they will call me to order in a letter, also, for your journal.

But first, it may be asked, what are the advantages of thin seeding? And, again, are not the present race of farmers, with all their extensive erudition, their chemical and mechanical knowledge, as perfect in their profession as it is possible for men to be? And is it not highly presumptuous in a couple of gardeners at Maldon, the parson of Wix, and half a score more—such as a sheriff of London, and Mr. Piper, of Colne Eugaine, and others, to call in question the wisdom of the thousands of what Mr. Professor Johnston used rather jocularly to designate as intelligent farmers, many of whom cultivate their thousands of acres, and learnt the art of farming from their learned and scientific fathers and grandfathers, and they again from theirs, until they get back to the enlightened period described in chronological tables by the figures 1100, or two ones and two noughts? I grant there is some presumption in this; and if the perfection of an art depends upon the numbers who practise it, and the time it has existed, and of a conventional adherence to the customs of those who follow in the track of their forefathers only, I should consider that agriculturists in general, in this country and throughout Europe, must have reached the acme of perfection, and that it is presumptuous to call the practice into question, and more so to attempt to improve upon or especially to overturn it.

But, Mr. Editor, we thin-seeders have not the more faith in modern farming because it is in the same state as to principle it was in when the anno domini was described by the two ones and the two noughts; but we believe that modern chemical and mechanical science, modern capital, and modern improved agricultural implements ought, long before this time, to have overturned the system of boasted perfectability practised in those remote ages, as they have overturned the mode of travelling by land and by water, the mode of facturing all kinds of cloth, namely, woollens, silks, and cottons, and, in fact, every kind of factures and manufactures now made in this or any other European country.

Believing this, we advocates of thin-seeding, or proper seeding, do not consider the husbandry of our country to be any the more perfect because it is the same nearly as to principle that it was upwards of 700 years back, and not in near so good a state that it was in in some other countries more than three times 700 years back; nay, more, we believe and know that it is not in half so perfect a state as it is in at this day in the most ancient and numerously populated country of the whole world, namely, in China; for we believe that a Chinese farmer, with not half the means and advantages that an English one has, will make a given quantity of land, say 10 or 20 acres, grow annually more than twice the produce that an English farmer does, or can. Hence, Mr. Editor, believing that we thin-seeders consider it to be neither sinful nor presumptuous to believe also that the present system of agriculture practised in this country, with all our means at command, namely, our immense capital and our mechanical and chemical knowledge, ought long since to have been overturned, and that another system, worthy of our age and means, been erected in its stead, and in which what is called thin seeding ought to have been *one* of its chief features, or principal parts: I write *one* of the chief parts emphatically, as I wish to guard your readers, Mr. Editor, against concluding that I consider the bare seeding land, with a smaller quantity of seed, would alone effect all the improvements the thin-seeders have in view; on the contrary, they consider that four things are absolutely necessary for complete farming, and I might add one or two more, and not one only, namely—1stly, the freeing the land from stagnant water; 2ndly, ploughing at least two or three times deeper than ploughing is now anywhere commonly done, or, if instead of ploughing it be done by the spade or fork, still the better; 3rdly, keeping the land, also, in good heart, never allowing it to become poverty stricken or poor; and 4thly, comes thin-seeding, and then to make all complete and insure good crops, the lands should be kept scrupulously clean. But I may be asked, would not all this require a vast expense and much extra labour? I reply, it would not, for the additional outlay, whatever it might be, would be repaid in two or three years by the vast improvements of the crops. But it is not required that all the draining be done in one, or even two years; nor all the deeper cultivation, as a few acres, say 10, 20, or 30, might be done each year, until the whole farm should be completely drained 4 or 5 feet deep, and the whole land completely comminuted, wherever this could be done, at least 18 inches or 2 feet deep. Should your readers, Mr. Editor, faint-heartedly exclaim, This is all very well on paper, but it cannot, without an immense outlay, be carried into practice; I inform them that I know more than one farm thus acted upon, whereat the increase of the crops was so great, and especially the root crops, that the outlay in the fields where these were grown paid the first year, though the land was drained 4 feet, and dug by forks more than 18 inches deep.

In the county of Essex there are vast quantities of land which might be cultivated to almost any depth, and yet the epidermis only is scratched over three or four inches deep; how then in very dry seasons can the spongioles of the roots descend into the ground after the pabula to feed upon, and to be out of the influence of the burning sun in hot weather? They cannot descend, and hence thousands of acres of cereals and pulse are annually burnt up a month or two before harvest, and the crops, which in spring promised to be abundant, turn out to be complete failures. This, also, and over-thick-seeding are the real causes of the louse attacking beans and peas, and often destroying the crops entirely; but talk to the intelligent farmers, as Professor Johnston used jocularly to designate them, and they, one and all, tell you the lice are brought to their fields by the east wind. It is true the east wind dries up their shallowly cultivated lands, but the lice are the effect and not the cause of the evil they suffer. It is the same, also, with turnip and mangold crops on undrained and badly cultivated lands; these dry up also, as the dry harsh winds and hot sun greatly injure or destroy them. But do not farmers see that these effects never take place except on half or badly cultivated farms? A market gardener has never lice on his peas or beans, nor do his turnips welter and wither away on his well dug lands; indeed, these effects are only on lands called farms, they are never on lands called gardens; but surely the cause is not in the name? A rose, says the divine Shakespere, would smell as sweet if called by any other name; and peas and beans would be as secure from lice in fields as in gardens, if they were cultivated in the same way.

You must excuse me, Mr. Editor, if you please, for detaining you with this long exordium; I have done so to show that thin seeders do not rashly advocate the principles they adopt, or preach what they do not successfully practise. You observe, and I can also affirm from my own experience and my acquaintance with the thin-seeders, that in general they are thoughtful men, often, also, learned and scientific men; frequently, also, patriotic men, as their chief object is the rescuing of their country from the anomalous and degrading condition of being the richest and, it is said, the most powerful nation on earth, and yet is indebted to all other nations of the earth for the necessaries of life. For it is quite certain that were those other countries to withhold their supplies of food from us, and our country left to the food grown only by our own farmers, in one single year half the inhabitants of Britain, or more, would perish through dearth and famine, or of diseases the inevitable consequence of dearth and famine. Hence, the object thin-seeders have in view is the most patriotic possible; in fact, it is to co-operate with the Deity to supply all created beings with a sufficiency of food without wilful or ignorant waste, such as we often witness in the thick-seeders' fields. Whether the advocate of it be the profound chemist, Liebig, or a gardener, Hardy, or some parish minister quietly pursuing his studies and experiments and practice in some retired and remote village, he is certainly deserving, I opine, Mr. Editor, of more praise than censure; and I also opine, if he meet with little but censure or ridicule from his fellow men, he will so far be on the very best terms with the partner I have above referred to, with whom, I observe, he is a co-operator, and such a firm, I still further opine, cannot by any possibility accomplish anything but the utmost benevolence and the most possible good.

Having proceeded so far, Mr. Editor, should you deem what I have already written not unworthy your excellent journal, I think it prudent not to intrude further upon you this week than merely to add that thin-seeding is flourishing more this year than in any former one; and that all the reports I receive—and they are not a few, nor from ignorant men—prove that it is progressing securely, though, I admit, slowly, among the scientific and thoughtful of our country.

I will, therefore, now only add that Mr. Sheriff Mechi's crops are the best he has ever had; that Mr. Piper's also, though last year, after allowing for rent and all expenses, his profit was upwards of £10 an acre, this year's prospects are still better. Mr. Bentall, also, the celebrated implement maker, of near Maldon, has entered the field and tried his hand at thin-seeding, and with so much success that, though he drilled but 3 pecks of wheat only per acre, both himself and his unprejudiced farming bailiff are convinced that their crop is very much too thick in the rows, amd that the produce would have been more and better, had they drilled instead of 3 pecks not more than half that quantity; a mistake, however, which they have informed me they will remedy this next seeding season.

But the most wonderful crops are the Messrs. Hardy's, as these are magnificent and almost beyond belief, or that part of them for which they were enabled to put the seed in early, and for which they could well clean and cultivate their land. I am particular in making these observations, that visitors may not expect impossibilities, because the Hardys have only lately taken these farms, which were the foulest and in the worst condition I had almost ever seen land to be in before. So that, although their crops are not all equally alike, yet some of them I fearlessly pronounce to be wonderful, and to be a complete triumph of the system they have adopted.

To enable readers of this article to judge somewhat of the effect of their system, I observe that the rows of wheat are 2 feet asunder, and some even more, and yet so wonderfully has the wheat tillered, that the ground is all so well covered over that as the visitor looks up or across the field, the crops appear as if every foot of ground had contained seeds and plants, and until he walks between the rows he cannot believe but all the land had been so planted. The ears, also, are so wonderfully large, that the yield must be splendid and of the best quality of grain. I am particular in this statement, because, although I myself am an out-and-out thin-seeder, yet I never put my rows in wider apart than 12 or 14 inches, but here are nearly as fine crops from rows of fully twice that distance.

I am, Mr. Editor, pleased to give this account, because thoughtless men, aye, landlords as much as tenants, run down these "garden farmers," as they term them, and gallop past their farms holding their eyes to the ground, as if they feared to catch an infection; but although it is now five weeks since I last saw those farms, yet I will stake the produce against any thick-seeders in that neighbourhood.

But, Mr. Editor, not to quite weary you further at this time, if you will publish what I have already written, I will write again, and show you still further why I am an advocate of—shall I write?—rational seeding.

I am, sir, your obedient servant,

Parsonage, *Wix*, *July* 13*th*, 1857. GEO. WILKINS.

P.S. Since writing the foregoing I have again visited some of the crops of thin-seeders, and though but few of them cultivate their lands as lands ought to be cultivated, yet everywhere thin-seeding has succeeded. Mr. Sheriff Mechi's crops, who is comparatively a thin-seeder, are excellent, Messrs. Hardys' splendid, and others are nearly as good; Mr. Bentall's is not quite up to the mark, as the rows were too widely asunder, being 15 inches, and there was too much seed put into a row, but still the crop is good. But not to be too tedious to-day, I will give a more detailed account another week, and will describe the crops of several other thin-seeders at the same time.

GEO. WILKINS.

ON THE CAUSES OF THE BAD RETURN OF WHEAT IN 1856.

[TRANSLATED FROM THE FRENCH JOURNAL OF PRACTICAL AGRICULTURE.]

It is said that agriculture is the first of arts. That is true, if we mean by it that it is the most ancient and most necessary; but in the perfection of the processes of operations it assuredly does not occupy so distinguished a rank.

The blacksmith rarely burns his iron; nor does the baker wait the carbonization of his bread before he draws it from the oven. Both attend to the action of the heat, to see that it receives only the necessary degree; but the husbandman troubles himself little about the action of the sun, and allows his wheat to be roasted in the field with the most perfect indifference, and the result is an enormous loss, dearness of the articles of subsistence, and the diminution of the public property reduced by the purchase of foreign wheat. The evil is now without remedy as to the past, and I am speaking only by way of caution for the future.

The harvest of 1856 has yielded much grain in the departments of the north-east of France; but the greater part of it is small and thin. It requires an enormous quantity of it to fill the measure, so that the return by the sheaf, which is reckoned by the hectolitre, is very weak. The hundred sheaves, which yield in a good year four to five hectolitres, have produced that year only two or three; and there is therefore a large deficiency. We do not anticipate any inconvenience from it, because this deficiency may be covered by importations of wheat from Germany, which comes in great quantity.

If the grains of the last harvest are small and thin, it is because the reaping of the wheat was effected too slowly. In commencing harvest the husbandman always waits till the stalk and the ear are dry and brittle, whilst he should be careful, like the baker at his oven, to withdraw his sheaves in proper time from the scorching action of the sun.

It is generally believed that if the period of flowering has passed well, he has nothing to do but to wait the maturing of the wheat, and conveying it to the barn, to receive an abundant harvest. But if the flowering is important to success, the time of cutting is not less so, and up to the present period we have thought little of it.

Let us endeavour therefore to lay down some rules essential to this great question.

The months of May and June, 1856, were cold and very wet. They favoured the development of the herbage of the wheat, but retarded the fructification. The earing, which commonly in our department comes on from the 5th to the 10th of June, did not take place till towards the 20th of that month. The flowering lingered, and was not perfectly accomplished on the 30th, from which resulted a prejudicial delay, and the farmers supposed that it was consequently necessary to put off the harvest. But the month of July, with the exception of a few days of rain towards the 10th. was very favourable to the vegetation of wheat; the grain quickly formed, and had taken its full development towards the 30th, except that it was still tender and milky. To complete slowly its maturation it required shade and a mild temperature, which it would have found in the shocks; but instead of that, by leaving it standing, it was found exposed during the seven or eight first days of August, to an ardent sun (the thermometer in the shade standing at 32 degrees), the straw was rapidly bleached, the ascension of the sap was arrested, and the grain was dried as if in a stove, becoming thereby thin and shrunk.

In order that the grain may attain its normal size it is proper to shelter the stalks from a too-drying action of the sun, and to secure them early, and for fifteen or twenty days in the shocks. We know that the maturation is thus perfectly completed and much better than in the free air. Gardeners who bestow so much trouble upon their seed plants never fail to cut them when they are still green. They then tie them in small bunches, standing upright, sheltered with a cap or covering at the top, affording thus to the seeds, time to complete their formation.

A cultivator in the neighbourhood of Metz had a field of wheat some years ago wholly beaten down; and wishing to save it from rotting, and preserve it at least for forage, he caused it to be cut quite green, and set it in shocks, which remained in the fields till after the harvest. He was agreeably surprised to find the wheat-ears formed and well filled, and, on thrashing, the grain was handsome and heavy.

The farmers would therefore have done well to cut their wheat from the end of July, and to place the sheaves in shocks in the middle of the fields, protecting them at the same time from the too great heat of the first days of August. This was indispensable, especially with those which were the most retarded. I have seen a very large field of wheat of the finest appearance, lost for want of this precaution, yielding only thin wrinkled grain, light and worthless.

But it is very difficult to alter the habits of husbandmen, and make them comprehend the utility of an early reaping of wheat: they are fearful of harvesting light, and a less quantity, of grain, which is a great error. As soon as the stalk below the first knot and above the last, turns white, it is time to reap the wheat and to protect it from the too ardent action of the sun's rays. This is generally done in Flanders, and the wheat of that country passes, in all the markets, as being of the best quality. Besides, numerous conclusive experiments have been made, one of which I shall relate, because it appears to me to be the most correct and arithmetic.

When the Institute of Versailles was in existence, M. Boitel, one of the Professors caused a field of wheat to be cut at intervals of five days each, commencing on the 15th of July. This was rather too soon, but in matters of experiment it is allowable to go to the extreme.

The wheat cut the	15th July,	weighed	75	kilos. per hect.
,,	20th	,,	75	,,
,,	25th	,,	72½	,,
,,	30th	,,	71½	,,

This wheat was placed in shocks till the 4th of August, when it was thrashed. The first cut therefore had stood nineteen days and the last only seven days. The experiment would have been more complete if the shocks had all stood nineteen days before thrashing; but in any case, the difference in weight is all in favour of the early-reaped wheat.

However, M. Boitel declares that, in the last days of July, the *puccinia*, a kind of mildew, had slightly attacked the straw, and he does not know whether he ought not to attribute to this cause the difference in weight.

I do not, however, hesitate to affirm that the *puccinia*, which appeared so late, could not have had a marked influence on the size and weight of the grain, and that the difference of from two to three kilos. observed, was entirely produced by the slow and gradual maturation effected by the shade in the shocks.

At all events the experiment of M. Boitel proves beyond dispute, that it would have been more advantageous to reap the wheat from the 15th to the 20th July, in order to protect it from the scorching influence of the sun as well as from that of the *puccinia;* and the weight of the wheat is, in this case, the most conclusive proof of it. When I look at all the details of the common practice of the farmers—the choice of seed, the sowing broadcast, the harvest, &c., I discover numerous defects which annually deprive them of a profit of many millions of francs, without taking into account the privations and sufferings of the consumers.

It is therefore certain that the year 1856 would have yielded an excellent return in the Departments of the North-east of France, if the cultivators had known how to conduct their operations best for their own and our advantage.

There are great improvements to be made in the cultivation of wheat. The sowing in drills, by which half the seed is economized; the spring-tillage, which increases the produce; the harvesting before the complete maturity of the wheat, and the gradual drying of the straw, are important objects at which we shall arrive with time and patience. The *Journal of Practical Agriculture*, by its interesting publications, will have the glory of having powerfully contributed to it.

ANDRE,
Former President of the Metz Committee.

CHICAGO—A COMMERCIAL REVIEW.

DIRECT TRADE BETWEEN LIVERPOOL AND CHICAGO.

Yesterday morning the British schooner Madeira Pet, from Liverpool direct, dropped into our river, and modestly lay to at the north pier, near the mouth of the harbour. Intelligence of the arrival, however, soon reached the city, and before 10 o'clock she was visited by a large number of our citizens, who were anxious to look upon the first British vessel that had made the passage from Liverpool to Chicago. The question of direct trade with Europe had, it is true, already been satisfactorily demonstrated by the trip last year of the barque Dean Richmond, from this port to Liverpool; but that was looked upon by many as merely the American side of the argument. The solution of the problem in the arrival of the Madeira Pet is considered as the European demonstration. If both are satisfactory to the public and the parties interested, we may at once consider the trade as permanently established. That the interest manifested by the citizens of Chicago was not mere curiosity, the action of the Board of Trade on the occasion proves. As soon as it was known on 'Change that the schooner had arrived, there was evidently some sensation produced. The Board of Trade met, and the following resolutions, on the motion of Alderman Bross, were unanimously passed—

"Whereas the Madeira Pet, Captain Wm. Crang, has arrived at this port this morning with a cargo shipped direct for Chicago; and whereas this event is regarded as one of the most important and significant events in the commercial history of our city; therefore—

"Resolved, That we hail the arrival at this port of the Madeira Pet direct from Liverpool as the pioneer of an immense foreign trade soon to be opened between Chicago and Europe.

"Resolved, That we congratulate Captain Crang, W. J. Gilbert, Esq., the originator of this enterprise, and T. R. Gordon, Esq., interested with him, in the successful voyage she has made, and that they have our best wishes that they may realize a liberal profit from their enterprise.

"Resolved, That the successful voyage of the Dean Richmond last year from this port to Liverpool, and that of the Madeira Pet from Liverpool to Chicago, have fully established our confidence in the entire practicability of direct trade between Chicago and the ports of Europe; and that to facilitate this trade our Canadian neighbours will doubtless enlarge the Welland Canal, and construct the Georgian Bay and Ontario Ship Canal, with the capacity to pass vessels of a thousand tons burden, at as early a day as practicable.

"Resolved, That in our judgment the growing commerce of the north-west will warrant the making of the above improvements, and that they be and are hereby commended to the encouragement and the careful consideration of business men and capitalists of Canada, the United States, and of Europe.

"Resolved, That a committee of five be appointed by the chair, to confer with the hon. mayor and common council to recommend a suitable celebration of the arrival of the Madeira Pet, and to testify to her officers our high appreciation of their enterprise."

The Madeira Pet is a small topsail schooner of 123 tons register, is only 79 feet long, breadth of beam 18 feet, hold 11 feet deep, drawing with her present cargo (240 tons) 9 feet of water. She is not what would be termed on these lakes a good model, but is by no means so tubby as the generality of English-built vessels. In fact, she has a trig and neat appearance not often found in vessels of her size. She sailed from Liverpool on the 24th of April, and in 35 days reached Montreal. From Montreal to this port she took 45 days; but she was delayed eight days in the Welland Canal, and had, between Detroit and here, quite a succession of adverse winds and calms. Capt. Grang states that he kept up with a fleet of about 30 sale of lake vessels which left Detroit River with the Madeira Pet, and whenever it blew fresh he could pass them. Under ordinary circumstances the trip from Montreal to Chicago can be made in from fifteen to twenty days, and had the Madeira Pet got into Lake Huron two days earlier than she did, the prevailing winds since then would have brought her up at least ten days earlier. The Madeira Pet was built in 1850.

The Dean Richmond, as our readers probably know, was the enterprise of our own citizens, and was considered as partly an experiment. To the present undertaking we are indebted to parties not interested in our city's progress; but to shrewd, intelligent, business men. The originator of the project is W. J. Gilbert, Esq., of St. John, New Brunswick, who spent last season in our city and the north-west. The cargo, which consists of hardware, cutlery, earthenware, paints, glassware, china, white lead, &c., was shipped by Messrs. Ker, Welsh and Co., of Liverpool—Mr. Ker having also spent a portion of last year among us—and is consigned to Messrs. I. H. Burch and Co., of this city. Mr. T. R. Gordon, of New York, now here, is agent of the consignees.

CHICAGO'S FACILITIES TO HANDLE AND STORE GRAIN.

Chicago's pre-eminence as a grain depôt is due, not alone to her geographical position as the key to the great northwest, but also to the facilities she possesses to receive, ship, and warehouse. To the casual visitor, her grain trade does not appear to be near the magnitude that the figures show it to be. Our warehouses are all erected on the river and its branches, with railroad tracks running in the rear of them, so that a train of cars loaded with grain may be standing opposite one end of a large elevating warehouse, being emptied by elevators, at the rate of from six to eight thousand bushels per hour, while at the other end the same grain may be running into a couple of propellers, and be on its way to Buffalo, Oswego, Ogdensburgh, or Montreal, within six or seven hours. And all this is done without any noise or bustle; and with but little labour, except that of machinery. Take, for example, the Illinois Central Railroad Grain Warehouse. It can discharge twelve cars loaded with grain, and also load two vessels at once, at the rate of twenty-four thousand bushels per hour; or it can receive from twenty-four cars at once at the rate of eight thousand bushels per hour. So with the other large grain warehouses in our city. Our capacity to handle grain is unequalled by any other city or grain market in the world—not only from its dispatch, but also from its cheapness. Take, for instance, the following list of the warehouses in this city, with the capacity for handling, storing, &c. :—

CAPACITY FOR HANDLING AND STORING GRAIN.

Elevating Warehouses.	Capacity for storage. Bushels.	Capacity to receive and ship per day. Bushels.	Capacity to ship per day. Bushels.
Illinois C. Railroad (Sturgis, Buckingham, and Co.) ..	700,000	65,000	225,000
Rock Island Railroad (Flint, Wheeler, and Co.)	700,000	55,000	200,000
Chicago and G. U R. R. ..	500,000	50,000	125,000
Gibbs, Griffin, and Co.......	500,000	60,000	150,000
Munger and Armour	300,000	50,000	100,300
Munn, Gill, and Co.	200,000	30,000	75,000
Flint, Wheeler, and Co.....	160,000	25,000	50,000
Burlingame	100,000	25,000	50,000
S. A. Ford and Co.	100,000	20,000	40,000
Jas, Peck and Co.	60,000	20,000	40,000
Walker, Bronson, and Co...	75,000	30,000	60,000
Total	3,395,000	430,000	1,115,000

It will be seen from the above table that the capacity to "receive and ship" each ten hours is 430,000 bushels. This is a low average, making allowances for stoppages and delays in trimming the vessels, &c. The "capacity to ship" *alone* is 1,115,000 bushels per day of ten hours. These figures, however, may be and often are doubled in busy seasons, by working both day and night.

The capital invested in the grain trade of Chicago can hardly be estimated; but an idea of it may be formed from the amount of capital invested in the mere handling and warehousing of grain. The following is a valuation of the real estate and the cost of the erection of warehouses, elevators, &c., in our city:

CAPITAL INVESTED IN HANDLING AND WAREHOUSING.

Warehouses.	Cost of warehouses, elevators, &c.	Value of real estate.	Total.
Ill. Cent'l Railroad .	175,000 dols.	150,000 dols.	325,000
Rock Island Railroad	150,000	90,000	240,000
Gibbs, Griffin & Co.	(Buildings & Real Estate)		200,000
Chi. & Galena R. R.	„ „	„	300,000
Munger & Armour	80,000	80,000	160,000
Munn, Gill & Co...	66,000	80,000	146,000
Flint, Wheeler & Co.	25,000	50,000	75,000
Burlingame's......	20,000	36,000	56,000
S. A. Ford & Co...	(Buildings & Real Estate)		90,000
Walker, Bronson & Co.	„ „	„	80,000
Jas. Peck & Co. ..	„ „	„	80,000

Total capital invested in warehouses.... dols. 1,752,000

Besides the above, however, warehousemen have to employ a large capital in paying freights, making advances, &c., of which we have no record, but which must be quite large.

THE FUTURE GRAIN TRADE OF CHICAGO.

Such is a view of some of the leading features of the grain trade of Chicago, from which the reader can conclude what it now is. What it will yet become who dare predict? It is well known that the Northwest is in its infancy, and that the statistics we have presented from time to time in the columns of the press are but the beginnings of a mighty future. Our railroad now tap the Mississippi at ten different points, and are fast extending their iron arms into Iowa, Wisconsin, Minnesota, Kansas, and Nebraska. Hitherto the greater portion of these territories have been consumers. It will not be long before they are producers. Hitherto our own State has been but partially cultivated, as well as Wisconsin and Iowa. The fact that the Illinois Central Railway Company alone have already sold, to *actual settlers,* 1,059,556 acres of land, might lead even a stranger to western development and progress to conceive that, however great the grain trade of Chicago has become, it is still in its infancy.

It would be an easy task to show that the progress in the Northwest for the past five years has not been of that character which tells to proper advantage in statistical tables; yet even then they are startling, and to some people scarcely credible. Our agricultural operations have been carried on under great disadvantages on account of the sparse settlement of the country, the scarcity of labourers, and the lack of sufficient capital. Every year, however, lessens these obstacles, and the progress of future years will in all probability be in a greater ratio than that of the last five or ten. By aid of railroads now built and being built, in almost every county of Illinois, Wisconsin, and Iowa, Chicago becomes the great depôt for the produce of the entire Northwest. Here will congregate the capital of the East and of Europe for the purchase of breadstuffs, and here will be erected warehouses, the magnitude and capacity of which no one can estimate.

The grain trade of Chicago, it must be remembered too, in this connection, has a much brighter future than most people dream of. As a mere depôt for the grain trade of the East, Chicago will not long remain. The markets of Liverpool, Glasgow, Hamburgh, and the whole continent of Europe are fed by us—and it is not natural to suppose that we will remain an inland port when a canal of about 50 miles in length will carry our ships of a 1,000 tons burthen laden with grain to the St. Lawrence, and then into the broad waters of the Atlantic. No; Chicago—the commercial emporium of the entire Northwest—will before many years be placed in as direct communition with Liverpool, Havre, and Glasgow, as New York now is. When this shall have been accomplished—when our railroads have reached the valleys of the Missouri, the Platte, the Big Sioux, and the Red River of the North—then will the grain trade of Chicago begin to shape itself into a legitimate magnitude and importance.

AGRICULTURAL MACHINERY—WAGES FOR FARM LABOUR.

The inventions in the department of agricultural machinery which have been made within the last 15 or 20 years seem to be the result of that same providential order which in so many ways in the world's history has provided for the world's wants. The fertile soil of our highly-favoured West would fall far short of meeting the demands now made upon it, were it not for this kind of machinery, which so greatly increases results without a corresponding increase of manual labour.

Whoever will call to mind the various agricultural processes that were in vogue ten or fifteen years ago, from the preparation of the ground for planting, up to the final preparation of the crop for market, needs not to be told that with the use of the labour now devoted to that pursuit, employing the same implements, only a small per-centage of the products of the earth now annually realized could be produced. Without the aid of the present improved machinery, it is clear that a much larger force of labourers would be required in our agriculture, while the other industrial pursuits would be to the same extent behind their present actual condition.

It would be an interesting statistical fact to ascertain the number of persons engaged in the manufacture and sale of agricultural machinery. In this city there are some five or six establishments, employing from 100 to 300 persons each; while there are large establishments at Rockford, Freeport, Geneva, Ottawa, Bloomington, Alton, and other places throughout the State. Probably we should not over-estimate the number thus engaged in Illinois were we to place it at ten thousand. Ten years ago, if we remember aright, there was but one establishment in the State, on a scale of any considerable magnitude, designed exclusively for the manufacture of agricultural machinery—we mean McCormick's Reaper Manufactory in this city. Now, we not only have at least a dozen reaper and mower manufactories, but also extensive establishments for the manufacture of threshers, cultivators, drills, improved ploughs, &c. &c. Go into any county in the State, and we will find great numbers of these various machines in possession of the more thrifty and enterprising farmers. In conversation with our manufacturers, from year to year, we have been surprised to find that the demand for them is steadily increasing.

We saw it stated the other day, in a Southern Illinois paper, that the agent of McCormick had sold, the present season, two hundred and fifty reapers in that one locality. It is said by good authority that a mower with two horses, two men and a boy, will accomplish the work of twelve men. If so, it must *save* the labour of *five* men at least. Then these two hundred and fifty reapers and mowers of McCormick's, sold in one locality the present season, have *saved* the labour of *twelve hundred and fifty men* during the harvest now nearly completed there.

In the State at large there cannot now be in use less than 10,000 reapers and mowers. If the estimate above is not too large, then the labour of an army of 50,000 able-bodied men has been, and will be, saved by them alone during our present harvest. Supposing each machine to be employed thirty days, and estimating labourers at only one dollar per day, we have a saving in money paid for labour of 1,500,000 dollars. But in some counties in this State labourers are difficult to obtain in the harvest field at three dollars per day. If we take this price as a basis for the estimate, the saving during harvest will reach the enormous sum of 4,500,000 dollars. A very good authority makes the annual saving in men in the United States at large, by the use of reapers and mowers, equivalent to the labour of 300,000 men, and a saving in money of *twenty millions of dollars*.

The above estimate is for reapers and mowers alone. If to the saving thus effected we add that resulting from the use of threshers, drills, cultivators, corn-shellers, &c., the magnitude of the sum annually saved would challenge the strongest credulity. Let it be borne in mind, too, that all this is the result of some eight or ten years. There is yet room for the inventive faculty in this department of mechanics, and we doubt not it will continue to be used to good purpose. We expect to see steam-ploughs employed in farming operations.

Considered merely in the light of dollars and cents, this subject is one of vast significance. But there is a higher view to be taken of it—its effects upon civilization. Looked at with reference to this result, its importance cannot easily be over-estimated. But this branch of the subject is too extensive to be treated of at length. We can only say here, that in the concentration of labour and of intellect which flows from it, in the increased attention that is necessarily paid to other arts by the withdrawal of labour from agriculture, we have the prophecy of a greater progress in both material and spiritual interests than the world has ever yet witnessed.—From the *Chicago Press* of July 18.

CALENDAR OF AGRICULTURE.

In North Britain the harvest is prolonged into this month, and must be managed as before directed. Cut beans with the hand-sickle; tie the crop into sheaves with straw ropes or of tarred twine, and carry when dry; and build into ricks, or lodge the crops in barns. Thatch the ricks quickly, rake the rick-yard clean, and carry the rubbish to the dung-yard. Employ plenty of hands in harvest, and reward them liberally.

Gather fruits, as pears and apples.

Pick hops; use the haulm for litter, and place the poles under cover for another year. Dry with coke as fuel; some use sulphur, to give the hops a yellow tinge.

Plough the wheat fallows, and towards the end of the month begin to sow the grain. Finish the laying-on of dung and composts; plough leys for wheat; and scuffle the bean and pea grattans, as a preparation for wheat-sowing. Prepare, by fallowing, the lands intended to be planted with early spring crops, as potatoes, Swedish turnips, parsnips, and carrots. Lay on and plough in the dung in drills, or in broadcast; if in drills, it only remains to reverse them in the spring, and plant the crop on the fresh tilth; if in broadcast, the land will require a ploughing before being drilled. This autumnal preparation both facilitates and expedites the spring operations, but only benign climates admit the application of the system.

Scarify the surface of lucerne grounds before laying upon it the finely-pulverized composts. Spread the dung over the surface very carefully and evenly; bush-harrow it, and then roll it heavily in dry weather. This treatment will produce an early spring vegetation.

Collect manures by every means to the liquid tank and to the compost heap; burn for ashes, and keep them under cover.

Towards the end of the month sow rye for a seed crop, and also for being eaten on the ground in the spring. Sow winter tares mixed with rye, or barley, or beans, on lands clean and in good heart, or on a partial fallowing with dung.

Scour road-sides: clean out open ditches, to be ready for winter floods; enlarge the courses of brooks. Use all the excavated materials for composts—the very earthy parts to be mixed with lime—and the vegetable for being burned into ashes. Omit no opportunity of collecting manures in any form.

ECONOMY IN BREAD.

Sir,—The price of provisions of all kinds has induced various schemes of economy, none more important or of wider application than in bread: and our French neighbours, being large bread eaters, have taken the lead in the more recent, and in some respects the best.

Some of them are for increasing the produce of bread from a given weight of flour, by the addition of a small portion of rice or maize (a mixture of the two would probably improve both): others without addition, by skilful and scientific management. And the latest, just made public, gets not only more bread from the flour, but more flour from the corn; and yet makes the bread all white, without alum or any other objectionable ingredient. From 100 lbs. of corn he gets 86 lbs. of flour, which makes 110 lbs. of fine white bread. He has discovered that the brown colour does not come *directly* from the bran, but is generated from it, during the fermentation and baking, by the presence of a substance which he calls "Cerealine," and which he has found means to neutralize. He therefore first sifts out the fine flour; then the coarse bran: and the intermediate portion (2nds and 3rds mixed), consisting chiefly of flour, but with bran enough to make very brown bread by the usual process, he works with a little yeast and much water, till the cerealine is neutralized. He then washes the flour with the water through a fine sieve, leaving the fine bran behind: and thus getting out all the flour in the purest state, and the bread more palatable as well as white and thoroughly wholesome and nutritious, thus closely approaching to perfection; so that the sooner it gets beyond the scientific journals the better. I hope in a few weeks, when it may have undergone further discussion, to send your readers practical instructions; and may conclude this with the Old English method of increasing the produce of bread with bran water, before "cerealine" was known, so that the bread was neither so white nor tempting as that of M. Mege Mouries just described. But the increase (152 lbs. instead of 125 lbs. from 100 lbs. of flour) renders it well worth attention in the present dearness of corn.

Meanwhile those who wish to understand the theory and details of Mouries' process may find it in the *Chemist* Monthly Journal, by Watt, London, for May and June, 1857.

Bran Water in Bread.

In the *Weekly Entertainer* of March 10th, 1800, is a letter of the Rev. Francis Haggitt, prebendary to the Bishop of Durham, in which he states that flour kneaded with bran water will produce a more substantial and a greater quantity of it than bread made in the common way. In the Rev. baker's experiment, he took 5 lbs. of bran, boiled it, and with the liquor strained from it kneaded 56 lbs. of flour; adding the usual quantity of yeast and salt. When the dough was sufficiently raised, it was weighed and divided into loaves; the weight before being put into the oven being 93 lbs. 13 oz., or 8 lbs. 10 oz. more than the same quantity of flour kneaded in the common way; it was then baked two hours, and some time after weighed 83 lbs. 8 oz.; showing a loss in baking of 10 lbs. 5 oz.; the same quantity of flour kneaded with common water losing 15 lbs. 11 oz.; and producing only 69 lbs. 8 oz. of bread. The gain by the bran water is thus 14 lbs. out of 70 lbs., or a clear increase of one-fifth; while the bran, after being used in this way, is equally fit for many domestic purposes, and better for pigs and poultry than if given raw. This increase of 14 lbs. when only 5 lbs. of bran were boiled appears at first astonishing, but he accounts for it thus:—1. The water weighs half a pound a gallon more than common water. 2. Owing to its glutinous consistence it is less subject to evaporation by heat. 3. A greater quantity of it is necessary to make the dough, viz.:—3¾ gallons instead of 3 gallons. The 5 lbs. of bran weighed, after the liquor was strained off, and while wet, 17 lbs. To persons who are making their own bread these facts must prove interesting; and looking at the experiment in a chemical point of view there is no doubt the decoction of bran would have a very considerable effect on the flour.

Increase by aid of Rice, &c.

Towards the end of 1853, a discovery was announced in Paris, by which upwards of 520 lbs. of good bread could be made from a sack of flour (280 lbs.); and for which a large reward was demanded. In April, 1854, the inventors were invited to Marylebone Workhouse, London, to put their discovery to the test. The following is a brief report of the experiments:—

A very remarkable exhibition took place on Thursday last at the Marylebone Workhouse, by Messrs. Morlan, Martin, and Journet, a French firm, who undertook to demonstrate before a committee of the Board of Guardians that, by a peculiar modification in the fermenting process, the amount of bread from a given weight of flour could be increased to at least 50 per cent. This singular method was invented by a French gentleman, a pupil of Orfila. Two sacks of flour were made use of, both under seal, and issued by the authorities of the workhouse. One of these was manipulated in the ordinary way, the other by the associated French manufacturers. The results were in the highest degree satisfactory. The first sack converted into bread by the usual method produced 90 loaves, weighing 360 lbs. The second bag of flour, placed in the hands of the French bakers, produced 134 loaves, weighing 520 lbs., giving an increase of nearly 50 per cent., under circumstances very disadvantageous to the owners of the secret. The place, the oven, and apparatus were all new and strange to their workmen, who had many difficulties to contend with. It was admitted by the spectators that, in consequence of such drawbacks, there was a considerable waste of bread in the oven. There was a large attendance of scientific men, as well as of bakers from the country and city, who witnessed the process with the keenest interest. All frankly and readily admitted that everything was above-board and fairly conducted, and that the result had exceeded their expectations. This marvellous increase in production does not arise from any weighty substance mixed with the dough, as no extraneous ingredient can be discovered in the loaf by the most rigid chemical analysis.

To this last assertion Professor Pepper, of the Polytechnic, demurred; and put a quantity of their bread to comparative analysis, of which his report is subjoined:—

Laboratory, Royal Polytechnic Institution,
April 15th, 1854.

Having continued my experiments and microscopic examinations this week with the bread made by the new French process, as compared with the workhouse bread, both of which, it must be remembered, were made with the same flour, I am the more convinced that rice is the material which confers the water-keeping property upon the bread made by the new process.

1,000 grains of each bread have been examined for gluten. The French contained 87¾ grains; the workhouse 96½ grains. Now, the increased weight of gluten in the former, found by working the 1,000 respectively into 529 and 360, must have come from "something added," as of course the flour has not the power of increasing the gluten during its conversion into bread; and the following analysis, deduced from the quantity of water and gluten obtained, will approach the truth as near as the analyst can go:—

529 lbs. of French bread contain—		360 lbs. of Workhouse bread contain—	
Gluten	34	Gluten	34
Gluten (possibly from semolina added	12	Starch, sugar, gum	174
Starch from rice added	29	Water	152
Starch, sugar, gum	174		360
Water	280		
	529		

The above analyses receive a further verification from the result of the following recipe sent to me anonymously from Brighton, and printed on a sheet of note paper:—

"TO MAKE GOOD BREAD.—Tie up one pound and a half of the best American rice in a thick linen bag, allowing it ample room to swell; boil it for three or four hours until it becomes a smooth paste; mix this while warm with fourteen pounds of best flour, adding the usual quantity of yeast and salt. Allow the dough to work a certain time near the fire, after which divide it into loaves, and it will be found to produce from twenty-eight to thirty pounds of excellent white bread."

With the assistance of Mr. Clapperton, baker, Mortimer-street, this recipe was tried, and produced 26 lbs. 13 ozs. of good bread, which, multiplied by 20, afford 536 lbs. 4 oz. from the sack of flour, 20 times 14 being 280 lbs.; being 7 lbs. more than the French bakers.

In making the bread with the boiled rice, Mr. Clapperton says that flour must be dusted in, and most vigorously kneaded, and he will be happy to make any quantity for the curious, or those doubtful of the fact. JOHN HENRY PEPPER,
Professor of Chemistry, Royal Polytechnic Institution,
F.C.S., A.C.E., &c., &c.

This ricy bread is very sweet, pleasant, and wholesome, and keeps moist longer than pure wheat bread, and thus tempts us to eat more; but made up with East India rice, or maize meal, both cheaper than American rice (either may now be had for 1½d. per lb., in the present state of the market), it will make more bread, equally or more nutritious, and not so generally tempting to greater consumption.

The East India rice may be treated as the American; but the maize meal must be thrown into six times as much cold water, to float the hush (or bran), which must be skimmed off.

In boiling them to the required paste (which should weigh 6 lbs. for each pound of rice or maize), they should not be set on the open fire, as that might burn them to the bottom; but on (or in) a boiler of water, so as to be heated only by the boiling water or steam. I. PRIDEAUX.

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR AUGUST.

Notwithstanding that we have had some severe storms in various parts of the country, the weather during the greater portion of the month has been remarkably fine, consequently highly favourable for the ingathering of the crops. In all quarters great progress has, therefore, been made in the cutting and carrying of wheat; and, with very few exceptions, the whole of it has already reached the stack-yards. We have, therefore, arrived at the close of one of the earliest harvests on record; and it now becomes necessary to consider the general weight and condition of the crops, as compared with last year. This, in a general way, is a delicate and difficult question to solve: but we apprehend that, when we carefully note all the information which has reached us on this head from practical men, and when we attentively call to aid our own experience in such matters, all doubts must vanish before a great amount of information easily to be understood. The wheats cut and carried prior to the commencement of the storms presented an unusually fine sample; though in a few instances, arising from the rapidity with which they ripened, they were rather "troughy." After the rains had ceased, much anxiety was shown by the farmers to secure that portion of the crop in the fields; hence, the quality of the second carrying, if we may thus express ourselves, has not turned out very fine; still, there is nothing seriously to complain of, beyond the fact that the bulk of the supply has turned out less valuable than the first. The last carting has proved good, sound, and heavy; consequently, we arrive at the conclusion that the entire crop is one of great abundance, of fine quality, and far superior to that of last year. Most of the samples grown upon good soils have come up to 64 lbs. per bushel; and, in some counties, the entire growth has exceeded five quarters to the acre. If we bear in mind that the harvest is three weeks earlier than in 1856, it must be admitted that we have now an unusually large supply of wheat on hand. Some parties have told us, however, that very little old wheat is now in the hands of the farmers: we, however, hold a contrary opinion. We must not be led astray by the mere fact that the sales of home produce in our various markets during the month have fallen short of last year at this time, because the cultivators of the soil have been too much occupied in the fields to attend to barn-door labours. Correspondents residing in various parts of the country inform us that large quantities of old wheat are yet to be met with; and that the farmers feel an indisposition to sell it, in the face of drooping markets. It is, therefore, possible that large supplies of the new crop, partly thrashed out in the fields to save labour and expense, will be forwarded for sale during the coming month, in order to take advantage of present rates; and that, consequently, the millers will have a remarkable choice of fine samples during that period. Scarcity being out of the question, prices must of necessity give way. On this point numerous opinions have been expressed; but the question is, shall we be inundated with foreign produce, and shall we have a continuance of the present large demand? That we shall receive a large influx from the Baltic for some time, does not admit of a doubt; still, our judgment is that prices will be chiefly regulated by the extent of the imports from the United States. In that country the produce is a very large one—much larger than usual, if we may believe the accounts which are frequently reaching us from the other side of the Atlantic; but, at present, prices there are too high to admit of shipments being made to England at a profit. But this is a state of things which cannot last long, because increased supplies at the sea-board will bring down quotations, and, even in the way of exchange operations, produce must be shipped in large quantities. The supply, however, will not be excessive; nevertheless, view the whole question through any medium, it must be admitted that our aggregate importations will be fully equal to our additional wants, and that prices generally must give way.

The commencement of barley harvest produced but a poor show of samples, arising from an adequate supply of moisture; but the rains added considerably to the weight and condition of the crop, and it may be fairly assumed that it is one of full average abundance; indeed, a large portion of it has proved in first-rate order, and to have fine malting properties.

Peas are turning out a light crop; but the yield of oats and beans may be called a fair average one.

Scarcely a complaint has reached us from any part of England on the subject of the potato disease. Throughout the month the crop has ripened rapidly; the tubers have appeared in first-rate condition, and the total crop is undoubtedly the best and heaviest ever grown. From Scotland accounts are equally satisfactory, and in some parts of Ireland the growth is likely to turn out well; still, it is evident that on the sea-coast the disease, or rot, is still to be met with. Our markets have been abundantly supplied, and prices have ranged from 3s. to 6s. per cwt.

This has been a remarkably fine fruit season. In every county the produce of all kinds is wonderfully large, and prices have, consequently, resumed an average level. The cider districts must be greatly benefited by a large return of apples.

The wool trade has been remarkably active. Nearly 90,000 bales of foreign and colonial wool have been disposed of, at the sales held throughout the month, and prices have advanced 1½d. to 2½d. per lb. This improvement in value has had considerable influence upon the demand for English qualities, which have advanced about 1d. per lb.

The various cattle markets have been only moderately supplied with stock, chiefly in middling condition, and the trade generally has ruled active, on higher terms. At one period the pastures were very bare of grass, but the supply has now become more abundant, yet without being sufficiently large to insure anything like a good second crop of hay.

The prospects of an average growth of hops has improved of late, and the duty has risen to £155,000. A few new pockets have found buyers at £8 to £12 12s. per cwt.

The turnip, beet, and carrot crops have progressed extremely well. They have derived great benefit from the rains, and an unusually large produce is generally anticipated.

In Ireland and Scotland considerable progress has been made in harvest work, under the most favourable auspices. Generally the crops are represented as good ones, both as to quantity and quality.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

The metropolitan as well as most of the local markets have been but moderately supplied with each kind of fat stock, and its general quality has exhibited a great deficiency, compared with the previous month. The demand generally having been active, prices have advanced from 2d. to fully 4d. per 8lbs., and even higher rates are anticipated by the graziers. To speculate upon greatly enhanced rates above present values would be attended with more than ordinary risk; and our impression is that the rise here referred to is chiefly the result of unusually hot weather having prompted competition—in other words, rendered it unsafe to transmit large supplies of dead meat from the provinces to London. This trade, it must be remarked, will speedily revive, and we have no hesitation in saying that, in a general way, prices are more likely to give way than advance. During a great portion of the month the pastures have been very bare of grass, and large quantities of hay have, of necessity, been consumed upon most stock farms; but it is satisfactory to learn that the health of the stock has continued good, and that instances of disease have been seldom met with.

We have imported a fair supply of stock from abroad, but the Dutch graziers have intimated that the proposed abolition of the butchers' monopoly in Paris is likely not only to increase the demand for both beasts and sheep, but likewise to enhance their value. It is admitted, however, the production of live stock in Holland is on the increase.

There is every prospect of a very large growth of beet, mangel-wurzel, and turnips for winter consumption. This is an important matter for the graziers as well as for the consumer, more especially as the produce of this year's hay crop has fallen considerably short of last season, which, it will be recollected, was the most abundant one ever known.

The total supplies of stock shown in the great Metropolitan Cattle Market have been as under:—

Beasts	20,695	head.
Cows	519	,,
Sheep and lambs	143,758	,,
Calves	3,173	,,
Pigs	2,450	,,

COMPARISON OF SUPPLIES.

Aug.	Beasts.	Sheep and Lambs.	Calves.	Pigs.
1853.........	24,345	172,102	3,431	2,990
1854.........	21,384	164,920	4,286	3,870
1855.........	20,816	151,870	3,356	4,272
1856.........	21,271	147,250	3,354	2,875

The arrivals of beasts from Lincolnshire, Leicestershire, and Northamptonshire during the past month have been 9,800 shorthorns; from other parts of England, 4,600 of various breeds; from Scotland, 229 Scots; and from Ireland, 240 oxen.

The imports of stock into London have been as follows:

Beasts......................	4,692	head.
Sheep	23,215	,,
Lambs........	1,760	,,
Calves......................	2,661	,,
Pigs	2,322	,,
Total	34,650	,,

COMPARISON OF IMPORTS.

Aug.	Beasts.	Sheep.	Lambs.	Calves.	Pigs.
1853	4,929	22,436	2,579	2,908	2,055
1854	5,507	19,770	1,178	2,495	2,176
1855	5,941	22,605	984	2,484	3,476
1856	5,677	17,801	1,271	2,301	1,901

The above comparison shows that we have received a fair supply into the metropolis. At the various outports about 10,000 head have been received.

Beef has changed hands in London at from 3s. to 5s.; mutton, 2s. 10d. to 5s. 4d.; lamb, 4s. 8d. to 6s.; veal, 3s. 6d. to 5s.; pork, 3s. 8d. to 4s. 8d. per 8lbs., to sink the offal.

COMPARISON OF PRICES.

	Aug., 1854.					Aug., 1855.					Aug., 1856.				
	s.	d.		s.	d.	s.	d.		s.	d.	s.	d.		s.	d.
Beef, from	3	2	to	5	0..	3	10	to	5	4..	3	2	to	5	0
Mutton ..	3	4	—	5	0..	3	6	—	5	2..	3	4	—	5	2
Lamb	4	2	—	5	6..	4	8	—	6	0..	4	8	—	6	0
Veal......	3	2	—	4	6..	4	4	—	5	4..	3	6	—	5	0
Pork......	3	4	—	4	8..	3	6	—	4	6..	3	4	—	4	8

Newgate and Leadenhall markets have been very moderately supplied with meat, and the trade generally has ruled steady, on higher terms.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BADENOCH LAMB MARKET.—Prices ranged as follows: For top lambs, from 9s. to 10s.; second lambs, from 6s. to 7s.; shot lambs, from 3s. to 4s. 6d. a-head.

BANBURY MONTHLY FAIR was very well attended for this time of year. The supply of beasts was not large, but of mutton an average number were on sale. Fat beef sold from 4s. 4d. to 4s. 8d. per stone; and mutton fetched about equal prices, the trade in the latter especially being very good. The supply of pigs was larger than the demand, and sellers felt a difficulty to part with some of their stock, consequently prices obtained were smaller than for some time past. Fat hogs sold from 10s. 6d. to 10s. 9d. per score, and stores realized rather less prices. Messrs. Danby and Caless sold by auction Cotswold breeding ewes, shearling rams, and older sheep. The breeding ewes fetched an average of from 50s. to 54s.; the rams, from 5½ gs. to 7½ gs. Subsequently, Mr. Cother conducted Mr. A. Bull's first annual sale and letting of his famed rams. There were 4 sheep let at an average of 11 gs.; and 20 sheep were sold, which made an average of 10 gs.—the highest selling for 16 gs., an advance on last year's prices. He then sold 15 splendid Cotswold rams, from the flock of Mr. Craddock, Eastington, near Northleach, which made an average of £15 3s. 9d.—the highest being 30 gs., also an increase in price over the last year.

BEDALE FORTNIGHT FAIR.—We had a smaller supply of all descriptions of stock. Prices were a litle higher for fat kinds. In-calving cows were good to sell. Beef, 7s. to 8s. 3d. per stone; mutton, 6d. to 7¼d. per lb.

BRECHIN FAIR.—But little business was done. Fat cattle brought 10s. per Dutch stone; while lean cattle are reduced in value since June from £1 to £3. There were also few sheep in the market, and few sales took place.

BRIDGNORTH FAIR.—The supply was even more scanty than usual; the shortcoming being in all probability owing to the fact that farmers are just now engrossed in harvesting operations. The attendance of dealers was correspondingly thin. Prices held firm. Cows, for the butcher, fetched from 7d. to 7¼d. Cows and calves from £15 up to £20. Ewes fetched 8d. and wethers 8½d. There were a few horses at high prices.

DUNHAM FAIR.—There was a tolerably good attendance, principally consisting of buyers. The best show was of fat beasts, which commanded good prices and obtained a ready sale, prices ranging from 7s. 6d. to 8s. per stone, and for the finest 8s. 3d. There was a fine lot of store beasts. Cows and their calves realized from £15 to £20 each couple. Young store beasts were not numerous, and may be said to have commanded late prices. Several fat sheep were shown, and for which there were plenty of buyers at from 7d. to 7½d. per lb. A fair supply of lambs at prices varying from 23s. to 30s. per head, according to quality, at which nearly all were bought up.

HORNCASTLE GREAT HORSE FAIR has been now for several days in full action. The fair concluded on Friday, the 21st. A correspondent says: "The show was a fine one. There was a good demand for first-class horses, and prices ran high. Young horses, suitable for carriages, sold at 45 to 50 guins.; well-matched ditto, 120 to 130 guins. the pair; hunters, 65 to 80 guins.; and ditto of celebrity, and up to heavy weight, made 100 to 140 guins.; cover hacks, 25 to 40 guins.; roadsters, 30 to 45 guins.; cobs varied in price from 20 to 40 guins.; cart colts, adapted for London purposes, 45 to 60 guineas.; cart colts, 28 to 35 guins.; brood mares, stinted to horses of high pedigree, made prices ranging from 15 to 40 guins.; and yearlings fetched from 15 to 30 guins.; good blood selling quickly; old and much-used horses remained on hand. The best description of brougham &c. horses were destined for London."

LINCOLN FAT STOCK MARKET.—There was only a small show of both beasts and sheep, consequently prices were slightly in advance of our last quotations. Beef realized from 7s. to 8s. per stone, according to quality, and mutton from 6d. to 7d. per lb.

LOCKERBY LAMB FAIR.—The numbers were considerably short of last year, being estimated at from 40,000 to 45,000 head. There was a very numerous attendance of buyers and on-lookers on the hill. Owing to the remarkably favourable season for grass, the flocks were in the highest condition, it being generally acknowledged that better half-bred lambs were never seen on Lockerby Hill than many of the lots were. Business commenced early, and in the early part of the day, for the best class of half-breds was animated. A goodly number of southern buyers arrived by the first trains, and favourable reports from Melrose gave a further impetus to the markets, and during the forenoon it may be described as brisk and very dear for good half-breds. After these were disposed of, the market grew rather slower, and secondary qualities were rather stiffer to sell, though even of these a good clearance was made by two o'clock. As usual, the best lots of half-breds were purchased by the spirited farmers in the valley of the Urr. Half-breds may be quoted at from 1s. to 2s, above the prices of last year. For the best Cheviots the inquiry in the early part of the day was good, but during the forenoon the demand rather slackened, and in the afternoon the market for this class may be described as "dear and drug." Prices were advanced on those of last year 1s. 6d. to 2s. a-head. Very few lots of crosses were shown, and some of these were bringing higher prices than were ever known for that class of stock on Lockerby Hill. A few lots of blackfaced lambs were shown, and for these there was a good demand, and high prices were realized.

MUIR OF ORD MARKET.—There was a considerable number of sheep, but they generally consisted of inferior lots. The market was considered dull, and few transactions occurred. The turnip crop in the south does not warrant buyers in making extensive purchases, and prices were low. Mr. Mundell sold a lot of shot lambs at about 7s.; Mr. M'Lennan, Ord, sold a lot of second lambs at 10s., subject to a luck-penny. He also bought a lot of blackfaced lambs at 8s. Mr. Beaton, Muirtown, bought a lot of second lambs at 7s. The best lot on the stance was purchased by Dr. Fraser, Kerrew, being top wedder lambs at 12s. 6d. Mr. Jackson, Invercastly, sold a lot of half-bred lambs at 20s. Mr. Lachlan Grant also sold a lot of blackfaced lambs at 6s. 3d. Thursday, 20th.—The cattle market evinced a fall in prices of upwards of 20s. a-head on the general descriptions of cattle. There were many lots of Highland cattle, and a few good lots of crosses. Up to the hour of four o'clock little had been done, and dealers were very stiff and backward in their purchases. The six-quarter old crosses were well represented, but not so with two-year-olds. The Highlands were not particularly good generally, though the prices asked in the early part of the day were high. The finest lot (generally allowed) of crosses was purchased by Mr. Mitchell, Brahan, who, it was said, bought them at £10. Mr. Fraser, Phoineas, sold a lot of year-old crosses at £6 6s. Mr. Fraser, Craggie, bought a lot of two-year-old Highlanders at £4 4s. Mr. Sinclair, Caithness, sold a lot of Highlanders, two-year-olds, to Mr. Fauns, Brechin, at £5 5s. Mr. Seller, Caithness, sold a lot of queys at £9. Mr. Chisholm, Auchnacloich, sold Highland queys at £6 10s. Mr. Fauns, from Brechin, purchased a mixed lot of Highland stots and queys at £4 5s. Mr. Campbell, Caithness, sold a lot of Highland queys at £3. Mr. Robertson, near Inverness, purchased a lot of six-quarter-old crosses at £7 10s. Mr. Hugh Ross, Spiningdale, sold a lot of Highland queys to Mr. Macbean, Tordarroch at £4. Mr. John Gunn, Caithness, sold a mixed lot of Highland stots and queys at £4. Mr. James Munro, cattle dealer, Auchinas, Caithness, sold a mixed lot of Highland queys and stots at £5 3s. A large number of horses were shown. Among them were some good nags, and the good horses were sold high prices. We heardof £95 being given for a pair of ordinary worikng horses. The demand was brisk.

NEWARK FORTNIGHTLY MARKET.—The supply of Sheep and Beasts was an average. Beef made 7s. 6d. to 8s. per stone; Mutton, 6½d. to 7d. per lb.

PENRITH FORTNIGHTLY MARKET was well supplied with cattle, sheep, and lambs, although not so largely as the fortnight previous. There was a good attendance of buyers, and prices were a little higher. About 30 head of cattle and 1,000 sheep and lambs were shown.

SHREWSBURY FORTNIGHTLY MARKET. — The best heifer beef made 6½d.; inferior cow, 6d. per lb..; useful stores and calves selling at fair average prices. Fat wether sheep, 7d. per lb.; store sheep in request. Fat lambs from 15s. to 25s. Pigs about the same as in our last market.

STOWMARKET LAMB FAIR.—There was the largest show of sheep that has been seen for years past, though the supply of lambs was somewhat short. There were also several pens of fat sheep. The lambs met with a ready sale from 25s. to 35s. per head; the demand far exceeding the supply, there was a great deal of business transacted. There were a few head of neat stock and several nag horses and ponies.

TEWKESBURY FAIR was thinly attended, farmers being busily engaged in harvesting. Beef and mutton averaged 7d. per lb.

YORK FORTNIGHTLY MARKET. — Grazing beasts were in good supply, with slow demand, at former prices. A moderate number of calving and dairy cows sold at late rates. A small show of fat beasts sold at 7s. 6d. to 8s. 3d. per stone. A middling supply of grazing sheep, and many unsold; mutton sheep had fair sale at 6½d. to 7d. per lb.

BISHOPSTOKE MONTHLY CHEESE MARKET.—The quantity pitched was about 300 tons, for which there was a good demand, at prices from 1s. to 2s. lower than that of last market. Chedders 72s. to 76s.; Somersets 64s. to 70s.; Wiltshire doubles 58s. to 64s.; half-cowards 50s. to 56s.; skims 30s. to 34s.

CHIPPENHAM GREAT MONTHLY MARKET was well supplied with nearly 300 tons of cheese, which, considering the weather, came to hand in good condition. The demand was equal to the supply, consequently a good clearance was effected, at prices as under: Broad doubles 56s. to 65s.; prime Cheddar 60s. to 68s.; thin 50s. to 58s.; loaves 54s. to 66s.; skim 20s. to 32s. per cwt.

DUNHAM FAIR.—The quantity of cheese on sale was on the increase, but it was not of very first-rate quality; and we quote prices at from 60s. to 67s. per cwt., at which most of it found purchasers amongst the country shopkeepers.

GLASGOW, (Wednesday last.)—There were 6 carts cheese, which sold about last week's rates—49s. to 52s. 6d. for new, and 69s. to 71s. for old. A large supply still continues to come forward to the weigh-house; sales being rather dull, only 10 tons were passed through the scales at last week's prices—48s. to 51s. Skim milk cheese, 25s. to 27s. per cwt.

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

The past month, from the earliness of the season, has brought us, so far as the midland and southern counties are concerned, to the conclusion of harvest; while in the North, as well as in Scotland and Ireland, the corn is being fast gathered in fine weather; this was the case in England till the middle of the month, when unusually heavy rains fell, doing much local damage in the north-east and central counties, and seriously affecting the condition of a good deal of wheat that was hastily gathered; but the root crops and grass lands were previously suffering so severely from drought, that the injury done to the one seems likely to be made up in the other's improvement, if we except the late potatoes, which now appear partially affected by disease. Our anticipations as to the crop of wheat are confirmed and even surpassed. There are doubtless exceptional localities; but many who have been thrashing in several parts of Kent, Essex, and other counties, affirm the yield, as well as quality, to be excellent, and beyond former years. All over the continent of Europe the same favourable reports obtain; nor is America excepted. The value of wheat has therefore declined, the decline only being temporarily checked during the unpropitious weather. The first four weeks of August show the reduction to be about 5s. per qr. in Mark-lane, and as the previous month exhibited a decline of 8s., the total is 13s. in two months. Comparing the averages at harvest-time last year with the present, we find during the first week in August they were 77s. 10d. per qr.; but the fourth week in August, 1857, only shows 59s. 2d., or a depreciation of 18s. 8d. per qr. Still, with a year of general abundance, and prices proportionately lower for the new crop in the Danubian Principalities, Odessa, and Italy, should good foreign arrivals ensue, as expected, present rates can hardly be depended on. The fact, however, that the crops of Indian corn were threatened by drought in those countries, as well as in Spain and Portugal, may affect wheat prices should there be a failure, and prevent so free an export as might be looked for. The partial failure of potatoes in Ireland, too, which must be made up in cereals of another description, should maize be deficient, may also help to prevent very low rates for wheat. Of spring corn there seems scarcely an average, especially of beans; but Egypt this year will be quite able to send the necessary supplies. In Europe, spring corn is decidedly deficient, especially in peas and tares. Spain, Portugal, Italy, France, Algeria, Southern Russia, the Danubian Principalities, a good part of Northern Europe, and nearly all America, have now secured their wheat crops, and with the fine weather prevailing, there is a fair prospect that the remainder will be safely housed.

Prices in France have not materially changed since our last, the quotations for the new samples at Paris being about 53s. to 58s.; new red, at Antwerp, was worth 59s.; Rotterdam prices for 60 to 61lbs. per bush. were 58s.; new Saale 62lbs. at Hambro' was quoted 58s. 6d., and heavy Marks 60s. 6d. per qr.; at Rostock, prices were expected to be about 50s. per qr. for fine 63 to 64lbs., red. Konigsberg, Danzic, and Stettin report their crops well got in. Prices at Danzic for 62 to 63lbs. wheat were 60s. to 62s. 6d. per qr.; Stettin quotes 51s., for delivery of new and old 61½lbs. red wheat in September, and 50s. for October; splendid 62lbs. white being held at 60s. per qr.; at Petersburg the price of Cabanka was 55s. per qr. Many of these quotations show that with our late decline there is no encouragement to ship, but advices hence will doubtless effect a reduction in the Baltic Ports. American rates, though nearly 10s. below last month, are still relatively above our own, Baltimore red 62lbs. wheat being worth about 53s., and white 58s.; while at New York, equal to 62s. is required for good 62lbs. red, and nearly 66s. for heavy white. Little new wheat has yet come down to Odessa, but good old soft wheat is now procurable there at 35s., and at Galatz only the same figure is asked for fine 62lbs. new Wallachian, which probably may be had at 30s. per qr.; Ismail was quoted 31s. per qr. It is in these countries, therefore, that a sufficient margin for profitable shipment appears; but then distance precludes the possibility of heavy arrivals for some time to come. Providence, therefore, has kindly remembered the wants of man, and justly claims the gratitude of the world.

The first Monday, in London, opened on very moderate supplies of both foreign and native. There was scarcely an average show from Kent and Essex, but it comprised about 1,500 qrs. of the new crop. The latter was generally in the finest order, over 64lbs. per bush. not being an uncommon weight: the best samples of white brought 68s. per qr., and Talavera even 70s.; but the runs were 64s. to 66s. for white, and 60s. to 63s. for red, there being but little of the latter. Old sold at former prices. In foreign little was doing, at unchanged value. Till rain came, the country markets were dull and declining, Hull and Birmingham being 1s. to 2s. lower, and the Tuesday's market at Liverpool noted a decline of 2d. per 70lbs.; but afterwards there was an equivalent advance, Grantham and Nottingham being 2s. per qr. higher, and Liverpool closing at a recovery from the previous decline.

On the second Monday supplies generally continued moderate, the morning's samples from the near counties being chiefly new white. The weather having taken up, millers were less eager purchasers, and it was found necessary to concede 2s. to 3s. on the previous Monday's rates, old participating in the decline, as well as foreign partially, excepting Russian sorts, which were inquired for from the country. The weather after Thursday proving very wet and threatening, the markets previously held were little altered, Newcastle, Liverpool, Manchester, Birmingham, and other places noting no change; but subsequently there was some excitement, Grantham and Nottingham being 3s. to 4s. higher, Liverpool on Friday quoting an advance of 2d. to 3d. per 70lbs.

The third Monday had better supplies, both native and foreign, though the samples sent from Kent and Essex were not numerous, and consisted chiefly of the new crop. The upward movement in the country, with some extent of damage in the North and East, produced an animated inquiry, the decline of the previous week (2s. to 3s.) being fully recovered on new samples; good foreign also sold in retail, at rather above previous rates. Liverpool did not respond to the London advices, the weather proving fine, and no advance was quoted there, or at Birmingham, Bristol, or Gloucester; but Manchester, Woodbridge, and Hull were 1s. to 2s. dearer, and Newark and Barnsley were fully 3s. up. The whole week, however, proving settled, produced a downward tendency on Friday, in London; Wakefield and Worcester noting a decline of 1s., Chelmsford 1s. to 2s., and Norwich being 4s. per qr. lower.

The fourth Monday commenced on good supplies from all quarters, with quite a large show of new wheat from Kent and Essex, many of the samples being rough and cold. This plenty, with every appearance of the continuance of harvest weather, most serviceable to Scotland and the North, produced quite a changed feeling in the trade, and factors, to meet it, readily consented to abate 5s. per qr. on the best parcels, the prices of inferior and damp lots being quite irregular, and even at this abatement the stands were not cleared. Wednesday proved no better; the over-left samples, being only placed in retail at the then quotations, a further fall being certain had any pressing been resorted to. Many of the early country markets did not fully submit to this decline, but Liverpool on Tuesday was 3d. to 4d. per 70 lbs. cheaper, Hull and Sheffield yielded 2s. to 3s., per qr., and Leeds quite equalled the London decline, as well as Spalding and Lynn. At Mark Lane, on Friday, business was quite at a pause, and a further heavy fall seemed certain.

As compared with last year, foreign supplies have greatly diminished, the principal ports then receiving in the first four weeks of August, in wheat and flour, 524,399 qrs.; whereas in the same period now, the quantity is only 229,901 qrs.; but the weekly sales this season exceed the last, because no new wheat, or very little, was then included in the returns. The imports into London for the first four weeks are about the same as during last month, being 20,371 qrs. English, and 60,500 qrs. foreign, The exports have been small, viz., 692 qrs. wheat, 911 sks. flour, 130 qrs. rye, 1,060 qrs. barley, and 1,550 qrs. oats. The flour trade fluctuating with the weather, every week, as respects country samples, has left off much as it began, but rathe against sellers. In town-made samples the price has been steady all through, and foreign has little varied. The receipts in the four weeks were 43,690 sks. from the country, with 4,299 brls. 2,596 sks. foreign, which shows a decline, as compared with last month, of 5,499 sks. English, 789 brls. 3,485 sks. foreign. This may partly account for there being next to no decline in flour, while wheat is so much lower; but the whole trade was keeping a very limited stock.

In barley the trade has been remarkably steady throughout the month, the only variations being a rise in new English malting on the third Monday, of 1s., which was lost on the fourth Monday. The crop, though better than at one time expected, has many steely and thin corns, so that stout and kindly samples are likely to be again in favour, especially as on the continent prices are high through a general deficiency. Old Silesian, at Stettin, was worth 33s. per qr.; new Saale, at Hambro', 40s. to 41s. 6d.; new Chevalier from English seed having been sold at 43s. 6d. per qr., and 1s. 6d. per qr. more being subsequently demanded. The arrivals into the port of London during four weeks have been 2,730 qrs. English, and 21,761 qrs. foreign. This is nearly the quadruple of the former month in English, though so small; but shows a falling off in foreign of about 11,000 qrs., stocks of old in continental ports being greatly reduced.

In malt a slight reduction in value occurred on the second Monday, when factors noted a decline of 2s. per qr. Business generally has been quiet, the finest qualities being most in request.

The oat trade, with very large foreign importations, chiefly from Russia, has through the month undergone no change of quotations for sweet corn, Russian descriptions being excepted, which, from their abundance on the third Monday, declined 1s. per qr. A very large quantity of these, which professing to be kilndried ought to arrive in good condition, have been unusually bad, as though the expense of drying had been attempted to be saved. Some cargoes have therefore been forced off at low prices; but a good portion has gone to store, to be improved in granary, from the impossibility of quitting them. The fact that the market has stood these supplies so well, is rather indicative of improvement in old oats, the stocks of which everywhere run short, and the long absence of any quantity from Ireland had prepared dealers to become large buyers. The crop, both in this country and in Europe, is thought below an average. At St. Petersburgh the last quotations were 19s. 6d. per qr. In the neighbourhood of Groningen they only reckon on two-thirds of a crop, and that their shipments will go short by 100,000 qrs. this next season. At Hambro' new Danish 40lbs. oats were quoted 24s. per qr. The arrivals into London during the first four weeks were 477 qrs. English, 1,045 qrs. Scotch, 3,998 qrs. Irish, and 181,467 qrs. foreign, making an average of 46,746 qrs. weekly, against 33,421 qrs. weekly in July.

Neither beans nor peas have varied through the month: of the former the crop is considered short, and rather so of the latter. But Egyptian beans are likely to be shipped plentifully, there being a good crop in that country. Peas, on the contrary, in many parts of the Baltic whence supplies are usually drawn, have greatly failed; and as boilers open at moderate rates, when the demand comes on they may be susceptible of improvement. Barley and maize being moderate, may prevent an increase in the value of maples and duns. The arrivals in four weeks were 1,376 qrs. English and 734 qrs. foreign beans; of peas in the same time there were 1,255 qrs. native and 4,626 qrs. foreign, almost exclusively white.

Linseed, with moderate arrivals, has kept its upward tone, which has lately been supported by speculation, notwithstanding the high rates; but high prices produce so many substitutes, that the speculation seems by no means tempting. Cakes have sold well, the drought lasting so long; and though keep is more plentiful since the rain, the rapid growth gives it little substance.

There has been a fair demand for winter tares, which have been selling at 6s. to 6s. 6d. per bush. Canaryseed has also kept its value beyond expectation, prices being high in Holland. Hempseed also has been supported. Red cloverseed has more buyers than sellers, the crop here being doubtful, and that in France not well reported. Trefoil has been dull. Some quantity of new white and brown mustardseed has come to market, but the high demands of factors—19s. for white, and 21s. per bushel for red—keep the trade aloof. Rapeseed remains at former value, as well as the seeds used for confectionary.

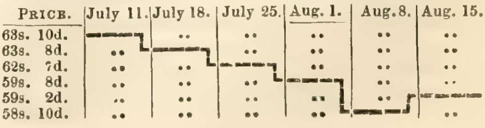
CURRENCY PER IMPERIAL MEASURE.

				Shillings per Quarter	
Wheat, Essex and Kent, white	45 to	62	new	54 to	63
Ditto, red	44	57		52	58
Norfolk, Linc. and Yorks., red	44	58		52	58
Barley, malting	41 to	43	Chevalier, new	43	45
Distilling	37	40	Grinding	26	33
Malt, Essex, Norfolk, and Suffolk	65	70		—	75
Kingston, Ware, and town made	67	71		—	76
Brown	60	61		—	—
Rye	—	—		30	36
Oats, English, feed	21	26	Potato	27	32
Scotch, feed	20	26	Potato	28	34
Irish, feed, white	20	26	fine	25	32
Ditto, black	20	24	,,	—	25
Beans, Mazagan	34	39	Ticks	36	39
Harrow	36	40	Pigeon	43	47
Peas, white boilers	40	44	Maple .. 42 45 .. Grey	40	41
Flour, per sack of 280lbs., Town, Households	46s.		fine	53	54
Country	41	43	Households	44	45
Norfolk and Suffolk, ex-ship				39	40

FOREIGN GRAIN.

				Shillings per Quarter	
Wheat, Dantzic, mixed	60	65	high do. — — extra	—	71
Konigsberg	50	70	,, — —	—	—
Rostock	46	70	fine.... — —	—	—
American, white	60	65	red 57 60	—	—
Pomera., Meckbg., & Uckermrk, red	50	60		—	—
Silesian, red	45	56	white	60	65
Danish and Holstein				45	56
Russian, hard	45	60	French	(none)	
St. Petersburg and Riga				46	61
Rhine and Belgium				—	—
Barley, grinding	26	31	Distilling	35	40
Oats, Dutch, brew, and Polands	20	28	Feed	19	25
Danish and Swedish, feed	20	26	Stralsund	23	26
Russian				22	25
Beans, Friesland and Holstein				37	39
Konigsberg	32	37	Egyptian	37	38
Peas, feeding	36	37	fine boilers	40	43
Indian Corn, white	36	39	yellow	36	39
Flour, per sack, French	—	—	Spanish	—	—
American, per barrel, sour	22	26	sweet	30	34

FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT.



IMPERIAL AVERAGES.

For the last Six Weeks:	Wheat.		Barley.		Oats.		Rye.		Beans		Peas.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
July 11, 1857	63	10	37	8	27	2	40	6	45	4	43	11
July 18, 1857	63	8	37	9	27	9	42	7	45	11	44	4
July 25, 1857	62	7	38	3	27	8	41	3	45	6	42	8
Aug. 1, 1857	59	8	38	5	28	7	39	5	46	5	41	1
Aug. 8, 1857	58	10	39	1	28	2	38	10	46	11	40	10
Aug. 15, 1857	59	2	40	0	27	8	40	5	47	1	40	10
Aggregate average	61	3	38	6	27	10	40	6	46	2	42	3
Same time last year	75	4	41	7	26	6	48	3	45	3	42	8

COMPARATIVE AVERAGES—1857-56.

From last Friday's *Gaz.*		s.	d.	From *Gazette* of 1856.		s.	d.
Wheat......	78,060 qrs.,	59	2	Wheat......	44,082 qrs.,	71	0
Barley......	1,422 ..	40	0	Barley......	2,385 ..	43	7
Oats........	8,237 ..	27	8	Oats........	7,518 ..	26	3
Rye........	250 ..	40	5	Rye........	132 ..	44	3
Beans......	2,745 ..	47	1	Beans......	2,339 ..	44	4
Peas........	1,738 ..	40	10	Peas........	412 ..	39	0

PRICES OF SEEDS.

BRITISH SEEDS.

Tares, new, per bushel................	6s. 6d. to 6s. 9d.
Mustardseed, per bushel..new 17s. to 20s., brown	to 21s.
Coriander, per cwt..........................	20s. to 24s.
Canary, per qr..............................	74s. to 86s.
Linseed, per qr., sowing —s. to —s...crushing	71s. to 72s.
Linseed Cakes, per ton	£9 10s. to £10 0s.
Rapeseed, per qr..........................	70s. to 72s
Rape Cake, per ton......................	£5 0s. to £5 10s.

FOREIGN SEEDS. &c.

Tares, per bushel	0s. 0d. to 0s. 0d.
Hempseed, small, per qr. .... —s. to 14s...Do. Dutch	16s.
Coriander, per cwt..........................	15s. to 20s.
Carraway ,, ...	42s. to 46s.
Linseed, per qr., Baltic ..69s. to 72s...Bombay	71s. to 73s.
Linseed Cake, per ton..................	£9 10s. to £10 0s.
Rapeseed, Dutch	76s. to 80s.
Rape Cake, per ton......................	£5 0s. to £5 10s.

HOP MARKET.

BOROUGH, MONDAY, Aug. 24.—We have no new feature to notice in our market since our last report. The improvement in the plantations, of which we spoke last week, continues, and the chances of a fair crop appear at present more certain. The trade continues quiet at about the currency of last week. Duty, £155,000 to £160,000.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS, MONDAY, Aug. 24.—Since Monday last rather large supplies of Potatoes in excellent condition have come to hand, chiefly by railway. The demand is steady, and prices are well supported. York Regents, 5s. to 6s.; Shaws, 4s. to 5s.; middlings, 3s. to 3s. 6d. per cwt. The imports are 88 baskets 11 bags from Ghent, and 20 bags from Rotterdam.

COUNTRY POTATO MARKETS.—YORK, August 15: Potatoes, 2½d. to 3d. per quartern, and 10d. to 1s. per peck. LEEDS, August 18: A good show of potatoes, at 9d. to 10d. per 21 lbs. wholesale, and 10d. to 12d. retail. RICHMOND, August 15: Potatoes, 4s. per bushel. SHEFFIELD, August 18: Potatoes, 10s. to 12s. per load of 18 stones. MANCHESTER, August 20: Potatoes, 9s. to 13s. per 252 lbs.

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.:	s.	s.	CHEESE, per cwt.:	s.	s.
Friesland..................	106 to	114	Cheshire..................	78	84
Kiel......................	104	112	Cheddar..................	74	84
Dorset	108	116	Double Gloucester, new ..	58	68
Carlow....................	106	112	HAMS,		
Waterford................	100	104	York	90	100
Cork, ...	98	106	Westmoreland	90	100
Limerick	92	100	Irish	84	9
Sligo....................	100	108	BACON: Wiltshire, dried	88	96
FRESH, per dozen..13s. 0d. to 14s. 0d.			Irish, green	78	82

ENGLISH BUTTER MARKET.

LONDON, MONDAY, Aug. 24.—Our trade is firm at last week's prices.

Dorset, fine	per cwt.	116s. to 118s.
Ditto, middling..............		100s. to 104s.
Devon		108s. to 112s.
Fresh	per doz. lbs.	12s. to 14s.

BELFAST, (Friday last.)—Butter: Shipping price, 100s. to 109s. per cwt.; firkins and crocks, 11d. to 11¾d. per lb.; Bacon, 63s. to 68s.; Hams, prime, 84s. to 90s., second quality 70s. to 76s. per cwt.; prime mess Pork, 105s. to 110s. 6d. per brl.; Beef, 120s. to 130s. per tierce; Irish Lard, in bladders, 76s. to 80s.; kegs or firkins, 68s. to 70s. per cwt.

WOOL MARKETS.

ENGLISH WOOL MARKET.

LONDON, MONDAY, Aug. 24.—The public sales of colonial wool, owing to the enormous demand and the high prices realized, have now been brought to a close. Since our last, the attendance of buyers has been numerous, and the whole of the supply offered has changed hands at very full prices. By private contract, the trade continues very firm. All English wools are active, and quite as dear as last week.

Per pack of 240lbs.

		£	s.		£	s.
Fleeces—	Southdown Hogs..............	£20	10	to	£21	0
Do.	Half bred Hogs	20	0		21	0
Do.	Kent	17	10		18	10
Do.	Southdown Ewes and Wethers	18	10		19	0
Do.	Leicester do.	17	0		17	10
Sorts—	Clothing, picklock	22	0		23	0
Do.	Prime and picklock	19	10		20	0
Do.	Choice......................	18	0		19	0
Do.	Super......................	17	0		18	0
Do.	Combing—Wether matching ...	22	0		23	0
Do.	Picklock....................	19	10		20	0
Do.	Common	16	0		17	0
Do.	Hog matching	23	0		24	0
Do.	Picklock matching............	20	10		21	10
Do.	Super do.	17	10		18	10

YORK WOOL MARKET, August 20.—We had about 200 sheets, chiefly Moor wool fleeces, which sold at 11s. 9d. to 12s. 6d. per stone—a few sheets of good bred fleeces sold at former prices. All the wool was sold.

LIVERPOOL WOOL MARKET, August 22.

SCOTCH WOOL.—There is a moderate demand for laid Highland Wool at the quotations. White Highland is scarce, and enquired for. For Crossed and Cheviot, little new having come to market, the transactions are limited.

		s.	d.		s.	d.
Laid Highland Wool, per 24lbs.		16	0	to	16	6
White Highland do		19	0		20	0
Laid Crossed	do..unwashed	18	6		20	0
Do.	do..washed........	19	6		21	0
Laid Cheviot	do..unwashed.	20	0		22	0
Do.	do..washed	22	0		24	6
White Cheviot	do..washed	33	0		38	6

FOREIGN WOOL.—The attention of the trade is still taken up with the public sales now progressing in London, which are going off very satisfactorily, and give a firmer tone to our market generally. A considerable quantity of low and middle class wools are being bought up for the American market.

MANURES.

PRICES CURRENT OF GUANO, &c.

	£	s.	d.		£	s.	d.
PERUVIAN GUANO, (per ton, for 30 tons) nominal	£13	5	0	to	£0	0	0
Do. Do. ....(under 30 tons)....	14	0	0		0	0	0
BOLIVIAN GUANO ....none	0	0	0		0	0	0

ARTIFICIAL MANURES, &c.

	£ s. d.	£ s. d.		£ s. d.	£ s. d.
Nitrate Soda (per ton)...	£22 0 0 to	£23 0 0	Sulph. of Copper or Roman Vitriol, for Wheat steeping......	42 0 0 to	43 0 0
Nitrate Potash or Saltpetre	29 0 0	30 0 0	Salt..............	1 5 0	2 0 0
Sulpht. Ammonia	17 10 0	18 10 0	Bones, Dust, per qr.	1 5 0	1 6 0
Muriate ditto...	22 0 0	23 0 0	Do. ½-inch......	1 4 0	1 5 0
Superphospht. of Lime....	6 0 0	0 0 0	Oil Vitriol, concentrated, per lb........	0 0 1	0 0 0
Soda Ash, or Alkali......	0 0 0	8 0 0	Do. Brown.....	0 0 0¾	0 0 0
Gypsum........	2 0 0	2 10 0			
Coprolite.......	3 15 0	4 0 0			

OIL-CAKES.

Linseed-cakes, per ton—			Marseilles......	£10 0 0 to	£0 0 0
Thin American, in brls. or bags	£10 10 0	£11 0 0	English.........	10 5 0	10 10 0
Thick do. round	10 0 0	0 0 0	Rape-cakes, per ton	6 5 0	6 10 0

JOHN KEEN, 35, Leadenhall-street,
(Late Odams, Pickford, and Keen.)

Williams & Co., 24, Mark Lane—Azotic..............................		£6 10 0

Manufactured by Hodgson & Simpson, Wakefield, and
Matthews & Co., Driffield.

Ammonia-Phosphate and Nitro-Phosphate..................	per ton	£8 0 0
Superphosphate of Lime	,,	7 0 0

Agricultural Chemical Works, Stowmarket, Suffolk.

Prentice's Cereal Manure for Corn Crops..................	per ton	£8 10 0
Prentice's Turnip Manure	,,	7 0 0
Prentice's Superphosphate of Lime	,,	6 10

Lancashire Manure Company, Widnes, near Warrington.

J. Knight & Co.'s Nitrogenized Bone Manures..............	per ton	£8 15 0

Manure Works, Grovehill, Beverley.

Tigar & Co.'s Celebrated Turnip Manures	per ton	£7 10 0

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THE FARMER'S MAGAZINE.

OCTOBER, 1857.

PLATE I.

BRITAIN; A CLYDESDALE STALLION.

THE PROPERTY OF HIS ROYAL HIGHNESS THE PRINCE CONSORT.

Britain, bred by Mr. Findlay, of Easter-hill, near Glasgow, in 1851, is consequently now turned six years old. He was got by a horse of Mr. Paterson's, of Waterlee, Renfrewshire, out of a mare by Clydesdale Tom, her dam by Mr. Kirkwood's Scotsman.

Mr. Paterson's horse, the sire of Britain, was by Mr. Barr's Barangray, one of the most successful stallions ever used in his district. Britain is equally good on the dam's side. She was bred by Mr. Finlay, of Sandy Hills, and is herself out of a mare long renowned for the good stock she has thrown. Indeed, "the family" on either side are famous as prize winners at the Scotch shows.

In 1853 Britain took the first prize of 20 sovs. as the best three-year-old colt for agricultural purposes at the Berwick Meeting of the Highland and Agricultural Society of Scotland. He was known for two seasons after this in Scotland, but sold in the spring of 1856, to His Royal Highness Prince Albert for 240 guineas, and at once transferred to the Home Farm at Windsor. In due course Britain was entered for the Chelmsford Meeting of the Royal Agricultural Society of England, where he was again successful—taking the first prize as the best stallion for agricultural purposes, against a strong show of Suffolk, Leicestershire, Lincolnshire, and Northamptonshire horses.

Britain is a beautiful dark bay in colour, well-mottled, like most of the Clydesdales, and altogether very lively-looking. With a good Clyde head, he has a superb crest, neck, and forehand. He is a well-furnished, good-bodied horse, with capital legs, but rather defective hind-quarters, and thin weakish thighs. His crowning virtue, however, is his action, which both as a walker and trotter is very superior. His stock, too, are full of promise.

Britain is still at Windsor, where our portrait was taken a few weeks since, basking in the full sunshine of royal favour.

PLATE II.

SHROPSHIRE DOWN WETHERS.

THE PROPERTY OF MR. HENRY SMITH, JUN., OF SUTTON MADDOCK, SHIFFNAL.

These wethers obtained the first prize, with the silver medal to breeder (also taken by Mr. Smith), as the best pen of fat wethers of the Shropshire and other black or grey-faced short-woolled sheep, entered at the Birmingham and Midland Counties show of Christmas last. They are thus spoken to in our report of that meeting:—"We especially admired Mr. Smith's prize wethers, for their splendid quality of meat, broad chines, and full plaits, and wonderfully good loins and rumps."

The Shropshire Downs, now fast rising in repute, are originally descended from a hardy mountain breed, through which they inherit an excellent constitution. This enables them to thrive on some of the most exposed districts; while on more fertile pastures they evince a rapidity of growth, and natural tendency to a heavy weight at an early age, certainly not surpassed by any other breed. The exertions of the Salopians, however, have not been directed to size and weight only. The Shropshire sheep unite with these two recommendations—excellent form and symmetry, first-class wool of thick pile and great length of staple, well-formed good dark brown heads, deep chests, famous legs of mutton, with a good dock set high on a straight long spine.

The class of "Short-woolled sheep not being Southdowns," now affords the Shropshire breeders an opportunity of exhibiting their stock on fair terms at the meetings of the Royal Agricultural Society. At Salisbury in this section the Shropshire Downs took three of the prizes for rams, out of the four offered. At Birmingham, as we often had to record, the show of this kind of sheep is one of the chief features of the yard.

HIGHLAND PASTURES.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

The grasses almost of necessity are the occupants of our hill counties. The low mean temperature of these upland fields, their abundant atmospheric moisture, sufficiently accounts for this fact. The more we recede, however, from the eastern-side of our island, towards the west, the more elevated become the sites of the productive pastures. The immediate neighbourhood of this town (Carnarvon), where I am now writing, affords a good illustration of this fact. On the sides of the mountain range, of which Snowdon is the chief summit, are found in every little available space small enclosures, extending to great elevations; wherever, indeed, between the slowly-decomposing rocks the soil has found a space sufficiently free from protruding blocks to form a small field, there we observe a wall of rough stones enclosing a little pasture, the grass of which (in the middle of September) appeared abundant in quantity, but of rather a poor description. There seemed no pains taken to improve either the produce of this grass or its quality; and as the same remark applies to several other districts besides this, it may be useful to dwell a little upon the means by which these may be fertilized. The grass lands of our islands are, generally speaking, the worst farmed of any of our fields. These are commonly left to Nature's care: if she supplies naturally good soils, if she pours down upon these copious showers of rain, if she supplies them with a warm atmosphere ever surcharged with insensible moisture, or if she covers them periodically with the turbid flood-waters of her rivers, then the produce of grass is considerable. Man has little or nothing to do, and he manages to perform his easy task with great and complacent success. But if the land is not so good, if the subsoil is tenacious, the climate more dry, then the occupier is still wont to be content with a less produce of grass, still relies upon Nature, and does but little to aid her bounty. This is the more remarkable, since very successful and extensive operations have been accomplished to increase the production of some of our pasturage districts. These improvements were originally suggested, as many other excellent agricultural operations have been, and will hereafter be, from chemical considerations. Cheshire, placed in a moist and warm atmosphere, possesses a breadth of pasturage celebrated for its productiveness: here are few corn farms—grass is the staple of the country; hence come those noble herds of cows; those excellent cheeses, which have for ages been so celebrated. Time, however, rendered even these happily-situated meads sensibly less productive. It was found that the effects of a constant export of cheese and meat gradually impoverished the soil, to an extent which the home-made manure of the stock was quite unable to remedy. The chemist was appealed to; and he, happily, suggested that one main substance steadily removed from the soil in the cheese, and in the bones of the stock bred on the Cheshire pastures, was the phosphate of lime, or bone earth, and that if so, substances containing considerable proportions of that salt would prove excellent fertilizers for these grass lands. This was the origin of the application of crushed bones by the Cheshire farmers—a manure which was found not only to increase the *productiveness* of the pastures, but also caused a remarkable improvement in the *quality* of the herbage. Here cause and effect were more than commonly traceable. The constant removal from the pasture, of the phosphate of lime, rendered those plants in which this salt is an essential ingredient incapable of successfully contending for the possession of the soil with those inferior grasses to whose luxuriant growth its presence in certain proportions is not so very essential. Other modes of dressing pasture land with impure phosphate of lime have also been profitably adopted. Peruvian

guano, which also abounds in ammoniacal salts, has been used. Urine also, for the same reason, is found a powerful dressing for grass.

The results of some experiments recently carried on under the auspices of the Highland Society of Scotland, support the practical conclusions of the Cheshire farmers. These were intended to contest the comparative value, for grass and grain crops, of Peruvian guano, nitrate of soda, and sulphate of ammonia, under the direction of Dr. Anderson. The experiments were committed to two Scotch farmers—Mr. Porter, of Monymusk, and Mr. M'Claren, of Mill-hill. (*Trans. High. Society*, 1856, *p.* 270.) These experiments were so arranged that the quantities of the manures bore a relative proportion to each other, and that all should supply the same amount of nitrogen: for this purpose nitrate of soda was taken as the standard. The proportions were

Nitrate of soda	112 lbs.
Sulphate of ammonia....	87 „
Peruvian guano.........	134 „

Here it will be well to note the three fertilizers employed: although they all contained the same amount of nitrogen, yet the last also had from about 40 to 50 per cent. of phosphate of lime. The trials at Monymusk were made on a light alluvial soil, with a dry open subsoil. The grasses (a mixture of perennial rye-grass with white and red clover) were top-dressed in showery weather, on the 8th of May, 1855. This month, however, and the succeeding June were unusually dry. The amounts of hay per acre produced by the grass thus dressed were as follows:

	Tons.	Cwt.
Soil simple	0	15
Nitrate of soda, 187 lbs....	1	5
Peruvian guano 224 lbs....	1	10
Sulphate of ammonia 145 lbs.	1	6

In two series of experiments at Mill-hill, the soils were, first, a light clay; and second, (those at Eccles Newton,) a clay soil. The manures were applied May 2, 1855, to the grass-land of Mill-hill on a light dry soil after barley, with results which will be found in the following table, in which column I. gives per acre the manure; II. the weights in tons and cwts. of grass when cut, July 7; III. the weight of the hay; IV. the weight of the second crop of grass cut October 10:

I.		II.		III.		IV.	
Soil simple		5	17	2	7	8	5
Nitrate of soda......	224 lbs.	6	11	2	16	6	9
„	112 „	6	4	2	10	6	13
Muriate of potash ..	206 „	6	9	2	6	7	18
„	103 „	5	9	2	2	7	6
Sulphate of ammonia	174 „	7	7	3	1	7	0
„	87 „	6	1	2	10	6	13
Peruvian guano	268 „	7	11	3	2	9	4
„	134 „	6	6	2	11	7	17

At Eccles Newton, upon young grass on a clay soil three experiments were made: in the first two of which the manures were applied on the 7th of May. The result of the application will be found in the next table.

		I. Stones.	II. Stones.
Clay soil simple produced hay		190	99
Nitrate of soda	112 lbs.	194	129
Sulphate of ammonia...	87 „	207	124
Guano................	137 „	192	127
Nitrate of soda........	37 „	196	132
Sulphate of ammonia ..	29 „		
Guano.................	46 „		

In experiment III. the manures were divided, half being applied 7th, the other 11th May, 1855, the results were—

		Stones.
Clay soil simple produced of hay......		127
Nitrate of soda...............	224 lbs.	140
Sulphate of ammonia..........	174 „	126
Guano......................	274 „	133
Nitrate of soda	74 „	149
Sulphate of ammonia	58 „	
Guano.....................	92 „	

The result of these trials is upon the whole confirmatory of the practice of the Cheshire farmers, and tends to the conclusion that on very many old pastures an application of phosphate of lime would be productive of very beneficial effects. On the soils, such as many of those of Carnarvonshire, resting on and formed by the decomposition of rock, from which the salts of lime are almost entirely absent, it would be difficult to arrive at any other conclusion as to the probable advantages of such a dressing for the pastures.

In the great grass districts of this side of England, cattle are the chief stock depastured; we see few sheep except those browsing on the mountain sides, and these are a small and more delicate looking breed than those of Westmoreland and Cumberland—otherwise there is a mode of enriching pastures by cake-feeding the sheep, which in many places is very profitable, and, if systematically persevered in for some time, very materially improves the quality of the pasturage. By giving cake to the sheep, they are not only considerably benefited, but their dung is very much enriched, and this we may note is distributed by them over the land without any labour to their owner. The phosphate of lime of the oil-cake, which is voided by the animal in a very finely-divided state, is more considerable in amount than is generally understood. Professor Anderson (*Trans. High. Soc.*, 1853, p. 510), found in 100 parts of different oil-cakes the following amount of phosphates:—

Linseed-cake	2·73 parts.
Rape-cake	3·87 „
Poppy seed-cake	6·98 „
Cotton seed-cake	2·19 „

There are, therefore, we may conclude, several modes of adding phosphate of lime to our old pasture lands, each of which may be preferable in different localities, and in the other varying circumstances in which the stock-owner is placed.

But we must not consider that the phosphate, on which we have been dwelling on this occasion, is the only mineral substance profitably available for the more permanent improvement of our pastures; other salts of lime are available. The sulphate of lime, or gypsum, is often a powerful and very profitable dressing for certain grasses, and is a manure very light of carriage, two cwt. sufficing for an acre of grass, and the same good results are still more frequently obtained by the use of lime or its carbonate. It not unfrequently happens, in fact, that the carbonate of lime is present in the soil in proportions much too limited for the production of a considerable amount of grass: this is especially the case in the district of North Wales, in which I am now writing. Hence the farmers employ lime brought out of the isle of Anglesea, as a dressing for their soils; but not to so considerable an extent as is desirable. The farmers of other districts, who possess more capital, also lime their pastures. Chalk, or carbonate of lime, is used by the Essex farmer for the same purpose. And these salts of lime, let us remember, are not, like the organic or other nitrogenous dressings, useful for only one grass season: their good effects are felt for years.

I have said nothing in this paper of the necessity for the drainage of pastures, their cleansing, or other necessary treatment, since those are essential matters of which no farmer with whom I have do is unacquainted; neither have I said anything of dressings, for these, of ordinary farm-yard manure: the inferior pastures, on which I have been on this occasion occupied, are rarely enriched in this way. They have hitherto been left to natures care—to the dews and rains, and to the minute portions of ammonia poured over our hills in their downfalls. I have not dwelt, I repeat, on these, but have rather been anxious to direct my reader's attention to fertilizers, which being light of carriage, and yet powerful and permanent in their effects, would, I feel well assured, supply essential ingredients for the permanent improvement of many of the pastures of our island. The effort is one of no small importance in this great cattle-breeding principality. To those, indeed, who have had occasion to reflect on the yearly increasing value of the numerous and valuable herds of cattle which tenant our western pastures, no arguments are needed to convince them of the fact. All these will readily agree in the conclusion, that whatever materially adds to the value of the food of our live stock, promotes not only the breeders prosperity, but in an equal degree adds to the general comfort of a meat-consuming community, now so steadily and so considerably enlarging.

AUTUMNAL CULTIVATION—AS A MEANS FOR GOOD FARMING.

It is highly necessary we should possess clear and distinct views upon every subject connected with the practice of agriculture; and we again revert to the system of autumnal cultivation, because we feel it to be a subject of vast importance to the farming interest of the kingdom at large, while it is our observation and conviction that the practice is neither generally understood nor sufficiently appreciated. It is certainly but partially and imperfectly carried out both as to efficiency and in extent.

We do not presume to the position of tutors in agriculture; but we do desire to see *more* of the autumnal fallow, and *less* of the curse of creation in the shape of the thorn and the thistle, and the commingled mass of grass and rubbish which feast upon and impoverish the soil. We want good farming to be general: we want bad farming to be the exception. We desire to see comparative garden-culture abounding; and well may you who have already attained to it plume yourselves at your will and at your pleasure upon your superior skill and surpassing judgment; but, where weeds exist and abound, there is other and more important work to be done. WEEDS and self-laudation and self-satisfaction will not do: they are our admitted enemies: they are as a stealthy foe, and as insidious robbers. Therefore Extirpation! must be our watchword and our cry, whilst the autumn system of fallow must be our practice. It is unquestionably the cheapest and best means by which to secure and maintain a clean occupation, and it has but to be tried in practice to be appreciated; and, when appreciated, it will be considered worthy of strenuous efforts to be carried out generally as a common system of culture. The time is coming when it must be viewed not as secondary, but of primary, importance; for the future will be far too competitive an age for the farmer manacled and tied with the fetters of his couch to stand a chance, or find either existence or breathing-space in the straining exertions of the hard-fought race for profit. He *must* be distanced. Extra weight will tell. If clean farming won't pay, foul farming can't; and the landed proprietors are gradually learning the worth of a good tenant, whilst they reject and eject the bad.

Autumn cultivation has for its main object the eradication and destruction of all the perennial weeds which infest the soil; and it is to this end every operation should, in the first instance, be fully directed. The annuals are but secondary: therefore for couch and so forth it is highly necessary to cultivate deeply, and, whether with Biddell's, Bentall's, or Coleman's scarifiers, or the common plough, it is essential to thoroughly break up the soil to its accustomed depth. Above all things, it is requisite to be careful that no couch remains in the solid soil beneath the passage for the share. We repeat, the soil must be broken to the depth at which it is usually ploughed, or perfect cleanness will not be effected. We know that this is often no light task, and a master's eye must watch the progress of the work, or it will be but partially and inefficiently performed. The truth is, every horseman has his favourite "Sharper" or "Pepper" or "Boxer," and these animals, in his estimation, are of far more consequence than good tillage, therefore spare them he will if possible. Besides, the weather is hot, the flies sharp, the land hard, and Tom or Jem will ease the depth a little too much, or swear point-blank it can't be done at all. Now comes the master's firmness and sound judgment to dictate what can and what shall be done, and how. We have seen many a complaisant man foiled and overruled by the plausibility or perversity of his men, but almost any land can be properly broken up by the use of the proper means; and, if the value of autumn cultivation were really understood, the country at large would present a very different appearance at the present time. Truly the system is on the increase; but how many a set of horses have we seen of late, and especially at the commencement of harvest, idly swinging their tails in some rough pasture, under the shade of some old oak or ash, instead of being first fed with a good feed of corn (which they seemed to require), and then attached to an effective implement for the cultivation of some neighbouring stubble—which, by-the-bye, contained "such good sheep-feed," "such laying for birds," and, in short, such an amount of devilry as would beggar description, and even defy spring-cleansing, with all its operations of many ploughings and endless harrowings. To be brief, two or three scarifyings or stirrings under a scorching sun, in August, would have been sufficient to destroy the thousand-and-one enemies which have flourished through a course of years, and still flourish on without molestation; and the horses would have been far better occupied than in doing nothing. Although every county is the best-farmed in the kingdom, according to local tradition and agricultural banter, yet every county needs to be much better farmed than it is. We are sickened at the sight of foul stubbles; and so infinite are the advantages arising from fallowing in the autumn, that it is both *the* system and *the* season we cannot afford to neglect. We allow there are difficulties to overcome in the cultivation of a wide breadth at so busy a time of the year; but to how many minds do any innovations present insurmountable obstacles! We do not say this in the spirit of condemnation or complaint; for many even sensible men do not comprehend, or appreciate, at first sight, the benefit likely to arise from any new but sound practices. Further, we need to be cautious; and there is no reason why autumn cultivation should be swallowed wholesale. If the utility to arise is unappreciated, the trouble of its accomplishment will appear incompatible with the advantages accruing—consequently, by such the task will not be undertaken, and thus men may or may not live on with a mental hedge of thorns to all progress, content to swim with the tide, because slow to appreciate, and far too local in education and in knowledge. Realize the value, and arrange the work of farm, that some cultivation at least can be done. We prepare for, and plant our wheat crop: why not eradicate and destroy our weed crop? The one is as important as the other, and the latter should be considered as primary to the former.

We have advocated deep autumnal cultivation for the destruction of the perennials, and, as time is an important consideration, the rubbish must be kept at the surface for exposure to the sun's rays. It may not be buried snug in the soil, to be shaded from the influence of the sun, but have the couch out for public exposure and the bright noon of day. Presuming a shower of rain to fall, how beautifully, by harrowing, the clods come to powder and the couch to the surface, to be baked by the sun, or burned in a series of bonfires!

With fineness of tilth and moisture of soil, now comes the turn for the vegetation of the annuals, and an abundant crop of young weeds soon present themselves. Thus perennials and annuals are alike destroyed, and the land freed for the growth of any desirable produce. Manure, too, can now be applied with unabated success; the expense of hoeing, in future, is reduced; and a crop can be grown which is worthy of the soil and the skill of the cultivator.

We know of men this year, who, just previous to harvest, broke up and perfectly fallowed their clover-stubbles. This was after once mowing the crop and feeding the after-growth, and only upon such lands where the succeeding wheat-plant is usually subject to wireworm, and to be root-fallen. They have, further, since cultivated their hundred acres of corn-stubbles deeply, and with full success. And nothing but the wetness of September has prevented much greater progress.

As a finale, cultivate deeply, keep the weeds at the surface, avail yourselves of your existing horse-power, and you will find autumnal cultivation much to your individual profit, and to the good of the country at large.

REVIEW OF THE JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

A new number of the Society's *Journal* is always opened with some interest. Who are the essayists? What fresh blood have we introduced? Or, of all the novelties abroad, on which does the Royal Agricultural Society of England confer the stamp of approval? At a little after date we have now the first part for the present year. This delay, however, has enabled the Editors to include in the number the prize lists and commendations complete of the recent Meeting at Salisbury. But this official document is strictly confined to the awards. It does not even embrace the report of the judges on the trial of the reaping machines. So that it is simply a matter of reference, coming for the first time, we believe, in the right place, and nothing more. Amongst the other fresh features in the "July number," are some very useful statistics and well-arranged tables on the weather, the public health, price of provisions, and wheat averages.

With these the volume opens. And then we come to the customary country essay, which is here devoted to one of the most interesting districts in the kingdom. The theme is Bedfordshire, and the author Mr. William Bennett, a gentleman many of his friends and late neighbours had at once concluded must write the prize history of their county. He numbers amongst his qualifications for the duty "having resided in Bedfordshire upwards of half a century, and having been engaged for many years in the practical operations of farming, even to the handling of the plough and the sickle." These are no mean recommendations, and they are evidently made the most of. The essay is remarkable for the easy, agreeable tone in which it is written, and the extent of information it embraces. We have ourselves some knowledge of Bedford's "pleasant places," and we do not remember anything that Mr. Bennett has omitted to touch on. Of course he goes back to "Francis, Duke of," and gradually comes down by a bridle-way to the Pauletts, of Beestone; the Thomases, of Bletsoe and Lidlington; the Howards, of Bedford, and others with a name not only in their own district, but far beyond its confines. No man was perhaps ever better prepared for writing the agriculture of a county than Mr. Bennett; and his report is an equal credit to himself and the work it appears in.

In the second place, and as well introduced, we have some further controversy on the Lois Weedon system of husbandry, in which Mr. Smith takes his own part against Mr. Lawes. Such discussions cannot but tend, as all such have of late, to a good result. We strike the spark of truth out of them. Mr. Lawes failed as signally as Mr. Smith succeeded. The answer of the latter is thus summed up :—"It was certain to fail, on a spit of what was little better than raw, unmitigated, unpulverized clay. The trial piece at Rothampsted being in this condition, I will only add that I do not believe there is a farmer in England, acquainted with his business, who will not share my surprise, not that the crops were so bad, but that there were any crops at all!"

We have next Mr. Valentine's prize essay on the Comparative Advantages of Sowing Beans in Spring or Autumn. Then a very valuable paper by Mr. Curtis on the Natural History of Insects affecting Clovers and Pastures. This is succeeded by another prize Essay on Farm Roads on Strong Soils, by Mr. Bailey Denton—a gentleman who long since has proved his ability for handling such a subject, while it is a weak point in the economy of farming, too generally overlooked. The value of this paper is materially increased by a postscript from the pen of Mr. H. S. Thompson, the Editor of the Journal. The conclusion of either, however, is the same :—for good roads good drainage is imperative. So that Mr. Denton is hardly off his own line even here.

The Rev. Mr. Manby supplies a most acceptable paper on the Cultivation of Early Potatoes; and Dr. Voelcker enters on the Composition of Farm-yard Manure, at a length and with a power that it would be impossible to do justice to in this glance. It is *the* article of the number; and although we may turn to it again, we should advise every farmer to read it for himself. We are already paying No. VIII., the concluding contribution to the part, the compliment of passing it through our columns. It is a continuation of Mr. Horsfall's Dairy Management—a subject to which none have so far given so much attention, or discoursed on with so much enthusiasm.

Whatever may be the quality of this number, and we estimate it as quite up to the average, it unquestionably falls off in quantity. It is by no means the handful one often gets hold of in a half-yearly part. Perhaps, after all, this is no such great mistake; provided of course nothing is omitted which might have appeared. There is plenty of room for "any more going on," and no excuse at all for leaving them behind. Still we are afraid there are some shut out, too. Where is our old fellow-traveller, Professor Way? Then there is an illustrious stranger, one Professor Henfrey; surely he should be with us! And Mr. Simonds? why does he stand aside, with his travelling-bag in his hand, when he has so much to tell of what he has seen? Hie! stop the engine! But they are *too late* again, and we are off without them.

"The consulting chemist of the Society," says the report published in this number, "has delivered a lecture before the members on the general character and geographical distribution of guano deposits, and has made his annual report on the details connected with his department?" Very good—but where is it? For lecture or for report we search in vain. Then "the Council have been favoured by Professor Henfrey, of King's College, with a lecture on the Nutrition of Plants." A very proper subject; but we did not happen to hear the lecture, and we can find nothing about it here. What shall we do? Ask Professor Henfrey to "say it again"? or give it up, like the lost books of the Roman sybil? And, further, "Professor Simonds, furnished with a circular letter to the several Consuls of Europe, left England as the veterinary inspector of the three national societies." We had the pleasure of hearing what Mr. Simonds had to tell on his return, but we did not like to say too much about it, because it was announced a full report should appear in the next number of the Journal. There is no such report in the next number of the Journal, and what "the three national societies" will say to it we do not know. That these three lectures should have been in this number there is no question whatever. It is impossible to imagine why they are not. We regret this very much, and for many reasons. It is just the kind of information that will not improve by keeping. At the same time it is just what the members generally require to be supplied with. Without full and early reports of what they say, the services of such men as Professors Way and Simonds can never be half-appreciated. This delay is as unfair to them as it is to the Society.

THE SPARKENHOE FARMER'S CLUB.

MEETING AT NUNEATON.

Does any one, after the fatigues and anxieties of harvest are over, feel that he wants a little break? Has he a fancy, not for what the world calls "a change," but for a little amusement, more or less congenial with his own tastes and pursuits? Would he like to spend a pleasant day amongst his fellows, with just object and purpose enough set forth to sanction the proceedings? Let us answer, at once, for a strong majority, and say he would; and, having his consent, let him come along with us. We are bound by the North Western for *another* agricultural meeting down in Warwickshire. It has been duly proclaimed, that "on Thursday, September the Seventeenth, the Sparkenhoe Farmers' Club will hold its annual meeting at Nuneaton."

It has been our duty, again, this year, to be present at all the great farming festivals of the season. In England, Scotland, and Ireland, from Newton in the West to Ipswich in the East, have we had to chronicle the still successful issue of these occasions. And now, with the hard work about over, we look down our list for a few of those autumnal gatherings, more or less local in their influence, though equally good in their intention. Such as are, in a word, the great harvest-homes of their several districts. Day by day we are gradually improving on these orgies. Whether it be the high day of a homestead only, a parish or a county, the celebration is now everywhere a better one. We honour Ceres more, and Bacchus less. We lose, too, much of that selfish character so long identified with these thanksgivings. A man may be made to feel happy without being drunk. He may be made to feel comfortable, and be able to enjoy himself in the company of his employers. And, above all, instead of returning home to hiccup out to his wife and family how much he has eat and drunk, he brings them with him to share his pleasures, as they most probably have his toils.

May not we borrow a hint from this? May we not more generally avail ourselves of so refining a medium? Shall "the master," who takes the medal for the best beast, usurp all the honours of the day, and not share a little with the good wife who is equally distinguished for her Dorkings and Hamburghs? Shall she have no place by his side, when town and country, the gentry and the tenantry, assemble in sweet council together? So far, at any rate, she has had none. At best, armed with a cup of coffee and a biscuit, she is perched in a gallery above, to catch the sickening scent of the dinner-table, and to note, critically enough, all such as speak the worst English, holloa the loudest, or drink the most. If not even thus provided for, she fidgets away the long hours over the tea-table of some town-cousin, "nursing her wrath to keep it warm," wondering when William *will* come, and whether it will be safe to let him drive!

The Sparkenhoe Farmers' Club has set us a better example. It promises, indeed, to open to us a new era in the observance of such anniversaries. Sparkenhoe is itself, we believe, a hundred in Leicestershire, while the club includes the districts of Ashby-de-la-Zouch, Hinckley, Atherstone, Market Bosworth, Nuneaton, and Tamworth. It is an association, moreover, not merely of the ruder sex. It owes, in fact, its very existence to the ladies; having originated, some five or six years since, in the union of two or three poultry-shows, of which the ladies of their several districts had been the chief supporters and patronesses. The club retains much of its pristine character. It offers, in short, premiums and encouragement for almost every good a rural life, well employed, can conduce to. There are prizes for servants who have merited them by their good conduct; for shepherds, for ploughmen, for drainers, for hedgers, and so forth. There are prizes for cheese, for wheat, for roots, and for vegetables of all sorts—turnips, mangolds, carrots, and cabbage. There are prizes for flowers and fruits, well classified for nurserymen, amateurs, and labourers. There are prizes for every kind of poultry that was ever heard of—for pigeons, rabbits, and for shepherds dogs! And then, having glanced through this division, almost everywhere well supported, we come to a cattle-show complete, in the next field. There are prizes for fat cattle and breeding stock, for milch cows and young animals. There are prizes for sheep — Leicesters, Downs, and cross-bred, fat or for breeding, as you want them. There are prizes for pigs, large and small. There are prizes for horses, hunting colts and fillies, hunting mares, cart mares, colts, and fillies. And there are prizes for implements, of course—in one general collection, where everybody tries to get together every good implement ever known or used.

Such a catalogue for a district meeting we never saw before. And yet it was not overdone, either. There was hardly a class without some entries. There were thirteen shepherd's dogs, with a Scotch colley as the winner. There was as good a show of poultry as we have seen this season. Some of the roots were famous; and Mr. Jennen's Berkshire boar as neat a pig as a man would wish to have. Then the Messrs. Spencer sent some capital Leicester sheep; while, if the Downs and cross-breds were not quite so commendable, the gap was well stopped some other way. Mr. Swinnerton's fat cows would have shown to advantage anywhere; and Mr. Townshend's shorthorn bull, and Mr. Lovell's milch cows, spoke equally strong for the character of their exhibitors. Nuneaton may be regarded as the especial home of the longhorns, but their opponents are evidently fast driving them out. For a class of their own, there were only five longhorns entered, and these by three breeders—Messrs. Godfrey, Chapman, and Twycross. The shorthorns, on the contrary, abounded, dotted here and there with a Hereford from the stock of the late Mr. Chamberlain. As a show of breeds, however, it was all one way. Curiously enough, the weakest place was in the entries of hunting stock. Although in the heart of the Atherstone, and flanked by such quarters as Ashby, Bosworth, and Leicester, there was not a hunting colt or filly really worthy of a prize. The mares were but little better; and the cream of it here all with one or two fairish young draught-horses. We do not quite understand why this should be so.

Messrs. Matterson and Huxley, of Coventry, carried off "the Newdigate" for the best collection of farm-implements; embracing in their selection the names of such famous artificers as Ransomes, Hill and Smith, Bentall, the Howards, Ball, Crosskill, Parkes, Samuelson, Richmond and Chandler, Biddell, Smith and Ashby, Nicholson, Fowler and Fry, Keevil, and others. The three other "collections" of course included very many of the same implements. In addition to these, the ubiquitous Mr. Thorley offered his "food for cattle"; and the indomitable Mr. Smith the sight of his steam-plough at work. The latter would "go" better by any other name. It does not plough, or at any rate leave ploughman's work. And people seeing this, at once become critical in their tone, and but faint in their approval.

And now having been right through the whole show—having handled the stock, worked the chaff-cutter, stirred up the pigs, and done everything but taste the fruit and pick the flowers, we will go to dinner. Mr. Newdigate is to preside, and there seems to be every promise of a goodly company to back him. There is my Lord Howe, and his son and heir Lord Curzon; the venerable Earl of Denbigh, and a contemporary from the other house in Mr. Spooner. There is the gallant Colonel Kingscote, and, shall we say it? the gallant Squire Colville, no longer didactic on musical attainments. Here are all the good men, landlords and tenants, the strength of so good a district. And they are going to dine in that well-furnished pavilion. And the ladies—bless them!—who are still lingering about the entrance, will have to be off, to sit in back-rooms at "the Bull," or over the chymist's shop, or anywhere, till we can come to them. Not a bit of it! The stately Countess of Howe takes her seat at the right hand of the chairman; his good mother, Mrs. Newdigate, sits within two of him. Lord Curzon has a sister, Colonel Kingscote a wife, and Mr. Colville is equally and as honourably provided for. There are some six or seven hundred sit down, and there is a smart bonnet, a laughing lip, and a bright eye to meet your own in every other seat. How could a dinner go but well with such support as this? And how could Mr. Newdigate help making the capital chairman he did, with such an audience to address, and such cheers to encourage him? With a good dinner, and good wine, fruit, sweetmeats, and everything the best taste could suggest, no wonder each succeeding speaker characterized it as the most successful meeting he had ever been present at. Or, that a townsman, in the pride of his heart, declared that if people had never heard of Nuneaton before, they would know it after this. We will not say how other societies might fare; but the presence of the ladies at the Sparkenhoe Club dinners is a great feature in the proceedings, that every man should see at least for once.

The prize-lists would be of little import out of the immediate neighbourhood. Neither, beyond those of Mr. Newdigate, would the speeches command much general interest. There are some points, however, in those from the chair, well worthy of attention. We here offer them to our readers.

In proposing success to the club, the Chairman said: "It may be that in other localities it would not be possible to have such a meeting as I see before me. It may be that in this happy district such is the good feeling which prevails between the three great classes which form the agricultural community, that they can afford to revert to the ancient customs which modern civilization has outgrown elsewhere. There is no greater mistake than to suppose that the presence of ladies with their families for such an object as this is something novel. What is our meeting but a gigantic harvest-home? What is it but a reversion to the most ancient gatherings practised in this country in years past? Go to the Mansion-house, and see how the Lord Mayor receives his guests, whether they be the guilds of London or the noblest of this country and the world. You will see them seated around his board with their families and friends, and it needs but a loving-cup to pass round to make the similarity identical (cheers). Well may we rejoice that we live in a district where the good feeling is such that we can thus revert to ancient practices. Although I believe much of our success is attributable to the constant patronage and support of Lord Howe, that success is embodied in the fact that by the conduct of your meetings you show yourselves worthy of the presence of the ladies. Long may you continue to do so! Long may the ladies continue to come here, to enhance the honour you do to successful industry! Long may they, by their presence here, tender their cordial respect to the persevering services of the long-tried labourer! In no other country could such a meeting as the present be found. I have known much—perhaps more than most men—of the tenant-farmers of this country. I have been identified with them in various ways, and I do feel more and more from day to day the value of that class. The existence of an independent body of tenant-farmers is proved, not only in this country, but throughout the world, to be the type of agricultural prosperity. If you look at Ireland, or the United States, or where you will, the growth of an independent tenantry is the type of agricultural improvement. It is better there should intervene some capitalist between the landlord and the labourer. Better there should be two intellects applied to the improvement of the land than one; two capitals: the one directed to the permanent improvement of the soil—the other directed to the attainment of an immediate return. It is better for the tenant-farmer that he should have the landlord to back him; better for the labourer that the landlord should stand as the mutual friend of himself and his employer, and, in case of difference, as their referee. Why, there is a magic in odd numbers!—and I will tell you what it is: it proves the dominion of opinion as contra-distinguished from an arbitrary power; it proves the dominion of the majority. You do not appoint two referees, but three, and then abide by the decision of the majority. This is the government of opinion. By the existence of a third class in agriculture we obtain this great advantage: we obtain as between each class—the landlord, the tenant, and the labourer—the power of opinion as expressed by the majority. I think I need not prophesy the continuance of this club; for you have seen the admirable arrangements made to-day, and must be convinced that you have among yourselves energy and talent to continue these meetings. It remains for other districts to prove whether there is in them such cordiality and good old English feeling as is prevalent among you—among the three classes of the agricultural body—as will enable them to imitate your practice, and emulate your great success (cheers). I beg to thank you for allowing me to preside. I may have been a prosaic president, but I am a president in earnest; and I trust that in whatever concerns the interests of the Sparkenhoe Farmers' Club, you will find your president of to-day your willing servant in the promotion of so good a work!"

In giving the concluding toast of the evening, Mr. Newdigate further remarked: "Of one thing I am sure: if anything could promote the prosperity of agriculture—if anything can cement the interests of the various classes engaged in agriculture—I have ever felt it my duty to seek its promotion; for, depend upon it, it is the staple interest of this country; and whether you look upon it in its industry—whether you look at it in the connection it produces between the various classes of the community—or whether you feel the cheering influence of its sports—agriculture lies at the foundation of the greatness of this country; and with it must rise or fall, fail or prosper, the interests of this mighty empire (cheers). I know not whither the Sparkenhoe Farmers' Club may take its course next year: perhaps at Tamworth. With all my heart, I trust its witty baronet (Hear, hear!) will lend his aid; and that all recollections of former differences will fade (cheers). We bear no ill-will, and if we have been at times somewhat roughly used, we have given as good as they brought; and let us in return tender them the hand of fellowship, believing that by the collision of opinion, truth is struck out, as fire from the flint; and that it is the very essence of free institutions that there should be diversities, while it is the security of the constitution that those diversities should all be merged in that common national feeling which, I rejoice to say, the troubles that have come upon this country have renewed (cheers). I believe that the old feeling of English honour is revived, and I believe that England is stronger for the revival. Catherine of Russia—no mean judge of human nature—said external wars were necessary to revive internal national feeling. We have passed through troublous times, and found that mere cheapness does not bring prosperity. Our strength has been felt, and though perhaps in Europe that strength is not yet recognized as fully as it may be, the time is not far distant when, if occasion calls, they shall know again that England is strong as she was under the Protectorate—loyal as when she reverted to the happy constitution under which we now live (loud applause). Allow me to give you—"Our next merry meeting!" We have shown that we know how to meet our adversaries—that we know our differences are but superficial. Long may the organization survive that has brought us together, and which carries us round a district to which we must all feel it an honour to belong!"

The other speakers included Lords Denbigh, Howe, and Curzon; Colonel Kingscote, Mr. Spooner, M.P., Mr. Cope, and Messrs. Bracebridge, Burberry, Swinnerton, Chapman, Cradock, and Valentine Barford. The last-named of these, in returning thanks for the judges, forcibly denounced the over-feeding of breeding stock, and urged the attention of the Royal Agricultural Society to the abuse.

THE QUEEN'S COLLEGE, BIRMINGHAM.—From an announcement in the *Times* of this day we observe that the Examiners for Honours in the respective departments of this College have conferred, after mature deliberation, the degree of Bachelor of Civil Engineering (B.C.E.), which the Council under Royal Charter is empowered to confer, on **James George Tuxford**, the youngest son of **William Wedd Tuxford**, head of the firm of **Tuxford & Sons, Agricultural Engineers**, Boston, Lincolnshire.

SEWAGE OF THE METROPOLIS.

Sir,—The unaccountable delay of the New Commissioners of Works, appointed by Parliament, for determining upon the plans recommended for adoption, makes one think it a doubtful matter whether anything will be done. In the mean while proposals have been suggested for the formation of a company for that object, and estimates have been made of the value of the sewage in a commercial point of view, and of the probable results in regard to profit, that may be expected to arise. To these estimates, which have been shown to me by a friend, I wish to direct the attention of the public generally, and the agricultural interest in particular.

Before, however, going into the question of these calculations, it may not be amiss to give a short statement of the actual condition of one portion of the metropolis, which affords a striking illustration of the growing and urgent necessity for the undertaking, and, I must add, of the reckless indifference of our men in power to the health and comfort of the inhabitants.

The district to which I refer is that on the south side of the Thames, and comprises the parishes of Lambeth, Kennington, Southwark, Bermondsey, Rotherhithe, with Camberwell, Walworth, and a part of Peckham. The population of these places probably amounts to half or three-quarters of a million; and formerly the more southerly part, as Walworth, Camberwell, Peckham, &c., were considered the most salubrious part of the suburbs of London, especially for those who had tender lungs, or whose constitutions were otherwise delicate. This salubrity of the district is easily to be accounted for, from several local physical causes. The whole tract lies on a deep subsoil of gravel, which is well known to be promotive of health, from the facility it affords for the escape of surplus water by the natural drainage. It was also less annoyed with the smoke of the metropolis, and less exposed to the north and east winds than any other part; besides enjoying a higher temperature in winter, and a lower in summer. In explanation of these seeming inconsistencies, I would observe that on the north side of the city the ground rises, so that the smoke of the whole city, when the wind is south, is blown *against* the rising ground and fills the houses with smoke and soot: and whilst the north and east winds are severely felt in that district, the south wind in summer is rendered still more oppressive by passing over the city. On the other hand, the south side of the river lying low, the north wind blows the smoke *over* the district, which is consequently not annoyed with it. At the same time, in winter, the artificial warmth of the London atmosphere tempers the north and east winds in passing over; whilst in summer the inhabitants enjoy the south and west winds in all their purity. Such were the chief causes of the healthiness of the district in question; and, in making this statement I am speaking from experience; for having lived east, north, and south of London, I have paid particular attention to the subject, and entertain no doubt whatever of the effects produced, by the facts stated, upon the sanitary condition of the neighbourhood, did not other causes exist to counteract them.

Such, then, was the former condition of the district in question; and I believe that if some of our older medical practitioners were asked, they would confirm my statement, and tell you that they were wont to send their consumptive patients to Walworth, Camberwell, and the adjoining districts, for restoration of health, or the alleviation of disease. The only existing evils were the open sewers; but these were then common in every part of London, and were by no means peculiar to the district; and besides, there were large open fields in every direction, and the hills towards the south were thinly built on; so that, what with the excellent subsoil and abundance of breathing space around, and at intervals, the influence of the open sewers was kept in check, whilst frequent cleansings still more counteracted their effects. There is not a doubt that when the Albany-road, Camberwell, was laid out and built, forming the main union of the Camberwell and Old Kent Roads, it was one of the most healthy and agreeable localities of the class in the suburbs of London. The houses always let well and at high rents. Of late years, however, a material change has taken place, not only there, but in the whole district from Vauxhall to Deptford, through the culpable neglect of former Commissioners of Sewers, in not providing a sufficient outlet for the sewage, by which that part has become a perfect nursery of fever, diarrhœa, dysentery, and cholera, which diseases annually destroy hundreds of lives. The leading causes of this change in the condition of the district I shall now endeavour to explain.

In the first place, the whole of the once-open ground, with but little exception, in and to the south of the district, has been built over, by which the free circulation of air is obstructed, and the temperature in summer artificially heightened. In the second place, the enormous increase in the number of houses has proportionately increased the quantity of sewage, which the water-closet system—now almost universal—renders more offensive and pernicious, whilst no adequate additional means have been provided for carrying it off. In the third place, the main sewers which are supposed to disgorge their contents into the Thames, somewhere at Bermondsey or Rotherhithe, lie *considerably below high-water mark;* consequently, there is only a certain portion of every tide in which the offensive matters in the sewers can be discharged, being driven back by the advancing tide water. This alone, creating as it does a stagnation, which sends up continually through the gratings the most fetid odours amongst a dense population, is of itself enough to ensure the constant presence of disease, in one or other of the forms I have named. And such is assuredly the case, as I have had the following opportunities of ascertaining:

About three years ago, in a conversation with a gentleman who has considerable property in the neighbourhood of the Albany-road, I was requested by him to make a survey of the district, for the purpose of preparing a case, to be brought before a public meeting of the inhabitants. I undertook the task, and the following was the result of my observations and inquiries:

I found on *each side* of the Albany-road, in its whole extent, an open sewer, through which the entire contents of the sewage of the surrounding districts, even as far as Brixton, poured in a black fetid stream, discharging itself into the sewer in the Kent-road. As if to render the effect of this abomination still more pernicious and offensive, the commissioners, in directing some alterations in the Kent-road sewer, had, in their wisdom (!), and in spite of the remonstrances of the inhabitants, directed the opening into that sewer on the south side of the Albany-road *to be closed,* without making any other arrangement for carrying off the sewage. By this piece of official stupidity, the current was turned back to find its way half the length of the Albany-road, where it crossed underneath, to form a junction with the ditch on the south side. But as liquid in no case can be persuaded to run uphill, there is a constant accumulation of the most offensive and deleterious matter in that portion of the sewer, sufficient of itself to engender—*and actually so engendering*—fever and cholera in their worst forms. I hesitate not to affirm that, in a moral point of view, the late commissioners are the direct causes of the loss of life occasioned by this culpable alteration, and are, in every such case, guilty of manslaughter.

But I need not to have particularized this individual spot, as a proof of the reckless neglect of the commissioners. The whole district I have named has equally been consigned by them to the ravages of disease in every form, as the medical men of the neighbourhood will testify. No valid excuse can be urged for this neglect, for an immense sum is annually raised in the district by the sewers' rate. I defy them to show that one-half of that sum has been expended on that side the water. The whole neighbourhood is now in precisely the same state, in regard to sewage accommodation, as when the cholera first raged in 1832, except that the mischief has been annually increasing, by the increasing quantity of sewage. The commissioners have been ready enough to construct magnificent sewers in the more aristocratic districts, in which they themselves reside, sparing no expense and going any depth to effect their object. I have seen, on the north side of London, sewers constructing at a depth of forty or fifty feet, and very properly so; but why the money raised in the humbler districts should be in any degree appropriated to the accommodation of the richer neighbourhoods, to the neglect of the former, I leave them to explain. In any part north and west of London the most ample provision has been made, and is still in progress, for preserving the health of the inhabitants; whilst the south side is almost wholly neglected, although made to contribute its full quota of the sewers' rates.

And what is the physical effect of this neglect of the commissioners? When I made my survey of the district, I inquired of the medical gentlemen and others, and they one and all agreed that it was becoming increasingly liable to febrile disease, and that, in consequence, the more respectable inhabitants were deserting it. I called on a house agent from whom I formerly held a house; and he assured me that such was the prejudice against the district, on account of its increasing unhealthiness, that house-rent had fallen full thirty per cent., and he found it exceedingly difficult to let them. Almost all the inhabitants on whom I called complained of constant indisposition, by which their constitutions were injured. The more wealthy made a point of removing, in the summer months, to more healthy localities, in order to avoid attacks of fever, which they were sure to experience if they remained. The Albany-road, however, is but a sample of the entire district from Vauxhall to Deptford, which receives its confirmation in the accounts of the Registrar-General. The prevalence of fever, diarrhœa, and other kindred diseases, is notorious; increasing as you approach Bermondsey, where the full effect of this defective sewerage is developed, it being the most unhealthy portion of the suburbs of London.

It is high time that this serious state of things should be put an end to; why the recommendations of Parliament have so long lain in abeyance, it is impossible to say; but it displays a culpable disregard of human life and happiness in those in whose hands the power is vested to carry them into effect In the meantime the establishment of a company, authorized by Parliament to take it up, so far as to *dispose* of the sewage at the outlet, would materially lighten the labours of the commissioners, by restricting them to that portion of the work which belongs to the City. The proposals and estimates of the company must be made the subject of another letter.

AN OLD NORFOLK FARMER.

London, Sept. 10.

THE AGRICULTURAL STATISTICS OF THE UNITED STATES.

Looking at the large extent of our trade with the United States, and the extensive supplies of agricultural produce we draw from thence, accurate statistics are greatly required, and would be very acceptable. The American government professes to do much in the way of returns, and the commercial journals of the States issue elaborate, but very conflicting estimates from time to time, of the prospects of the crops, the results of the harvest, the shipments, average prices, &c. In nearly all the departments of human effort connected with commerce and agriculture, with which the prosperity of the Republic is most immediately identified, there is felt to be a lamentable want of trustworthy information.

One of the latest Philadelphia papers received, touching upon this subject, says: "The great crops of the present year are nearly harvested over a large portion of the country, and are rapidly maturing in the other part of it. Yet at this time we have not even the meagre returns which are issued from the Patent-office of the results for last year. There are no official data at Washington upon which the productive industry of the United States can be accurately calculated; and all the statements which have been put forth, professing to give precise aggregates of the various crops, are conjectural and without any means of verification."

To the statesman, the merchant, the farmer, the mechanic, the manufacturer, and indeed the men of every pursuit, reliable returns of the production and industry of a country are of the first consequence. They form the basis upon which public policy should be directed and private interests governed.

Most of the European governments have, with a just appreciation of the value of statistics, taken extraordinary pains to establish a thorough system, extending to every calling, through which the completest and most detailed information is obtained every year. The examples of Scotland and Ireland show that there is no serious practical difficulty in organizing a system for obtaining early and reliable information with regard to the yield of the cereal crops. It requires but two leading requisites: first, intellectual comprehension, to grasp the subject in its large entirety; and next, the faculty of detail, by which its minute parts might be judiciously distributed over so large an area as the American Union presents, and embracing so many pursuits. A department or bureau on such a basis would materially reduce the cost of taking the decennial census besides furnishing materials for authenticating its most valuable results; and the people would thus be enabled to get some actual knowledge of the progress, resources, and annual wealth of the country.

In the absence of these collective official data, we are left to glean from various commercial channels the figures calculated to afford any indications of the condition of the agriculture of the States.

Agriculture has made wonderful progress everywhere in the last quarter of a century, and especially in the United States. The Americans are now not only producing grain enough to supply their own rapidly-increasing population, but have millions of bushels to spare. In the ten years between 1840 and 1850 the annual aggregate wheat crop of the United States was increased from 84,000,000 to 100,000,000 bushels, an advance of nearly 20 per cent.; but in 1855 it had further increased to 165,000,000 bushels—a larger ratio still.

In the new States the wheat crop is greatly on the increase, owing to the virgin soil of the country, and the large tracts of land which are annually cleared or broken up and brought under cultivation. In the middle States, where a favourable soil has been supported by careful tillage and suitable manures, the wheat crop has held its ground. But in the older States wheat production may be said to be rapidly on the decline. Climate, in the north-eastern States, and careless culture, with a general disregard of the wants of the soil, are among the most active causes for this decline.

Europe can no longer, under the increasing demand for comforts by the million, supply their food-wants; and an annual balance has therefore to be drawn from the countries across the Atlantic. The additional work to be performed by the United States long since exceeded the labouring force at her disposal; and a triumph of intellect over physical exertion was finally achieved by the inventive genius of the nation. Sowing, reaping, thrashing, and mowing machines have, according to the American journals, turned already, in the United States, a million of hands from the labours of the field and the barn to other kinds of employment, which, though necessary, would otherwise have been left undone. The entire value of the work produced by this million, while the newly-created machinery prepares the materials for their sustenance, is a clear annual gain to the country and to society at large.

In the invention and construction of labour-saving machinery to farming purposes consists the progress of the middle of this nineteenth century in agriculture; and, wonderful as the results appear, we stand as yet only upon the threshold of the new era of reform and improvement.

The United States may be divided into four characteristic geographical sections: 1. The large southern and south-western section, engaged extensively in the cultivation of the great staples of cotton, sugar, and rice, with Indian-corn as the principal element of subsistence. 2. The southern and south-western section, engaged principally in the cultivation of grain, tobacco, and hemp, and the rearing of live stock, in which slave labour is employed to a considerable extent, though not upon so large a scale as in the first section. 3. The large northern and north-western section, engaged very extensively in growing all kinds of grain, hay, root-crops, and other agricultural products of less value. 4. The eastern section, where manufacturing and mechanical arts form leading branches of industry in most of the States, combined with agricultural products (consumed almost exclusively at home), with dairy husbandry, and fishing and navigation followed in most of them.

The value of the bread-stuffs and provisions exported from the United States has progressed as follows:—1845, 16,743,421 dollars; 1850, 26,051,373 dollars; 1854, 65,901,240 dollars.

The aggregate domestic exports of the country, which in 1821 were under 65,000,000 dollars, were in 1849 131,710,081 dollars, and in 1856 266,438,051 dollars; while in 1854 they had been even twelve million dollars higher.

We have data from Washington, before us, which, though not very accurate, gives probably a tolerably close estimate of the agricultural produce of the United States in 1855. From these it would appear that the crop of Indian-corn was about 600,000,000 bushels, valued at 360,000,000 dollars; the crop of wheat, 165,000,000 bushels, valued at 247,500,000 dollars.

The oat crop, 170,000,000 bushels, valued at 68 million dollars, and potatoes, 110,000,000 bushels, worth 41¼ millions dollars. The cotton crop was estimated at 136 million dollars, while the hay and fodder crop was equal to 160 million dollars. The aggregate of the vegetable products was valued at upwards of £271,000,000 sterling, and the domestic animals and their products at 186½ million pounds more, showing that the agricultural resources of the country are of vast extent and magnitude. From the single port of Chicago alone the grain and flour exports to Europe are enormous. The shipments in 1855 were equal to 16,633,813 bushels, and in 1856 to 21,583,221 bushels, while the general receipts of grain have gone on increasing until that city has become the largest grain depot in the world. In 1854, 15,804,423 bushels were received there; in 1855, 20,487,973 bushels; and in 1856, 24,674,824 bushels, a steady annual increase of 20 to 30 per cent. The whole shipments from the United States to England in the year ending June 30, 1856, were 8,269,001 bushels of wheat, and 6,704,105 bushels of Indian corn, which was not equal to the collective shipments to different places from the single port of Chicago.

The British province of Canada is keeping pace with the United States in its grain produce. The wheat crop has increased by some 12,000,000 bushels in five years; and last year 9,391,531 barrels of flour were exported, against 6,413,428 barrels in the previous year.

ECONOMY IN BREAD.

ITS PRESENT IMPORTANCE.

SIR,—If it is true that he who makes three ears of corn grow where two grew before is a high benefactor to his country, how much less so is he who makes three loaves (sound, wholesome, and palatable) from the quantity of corn generally used for two?

There now lies before me a series of experiments on 590 quarters of wheat, ground and made into bread in succession, the year through, giving an average of 416lbs. of *seconds* flour per quarter (or 7½ bushels of 56lbs., or 1½ sacks of 280lbs.), and 355lbs. of bread per sack, or 523lbs. per quarter of corn—say, wheat 4lbs., flour 3.35lbs., bread 4.1lbs.); and another set, by Messrs. Lawes and Gilbert, of Rotherham, of different seasons and soils, averaging 528lbs. of bread, and 375lbs. of *fine* flour from one quarter of wheat (or grain 4lbs., flour 3 1lbs., bread 4.2lbs.).

If the average produce of wheat of the United Kingdom is about 14,000,000 quarters, requiring a yearly import of 5,000,000 qrs.; an increase of one-third on the bread-produce would nearly obviate that importation. We have seen (in our previous letter) bran water, or rice, easily effect that increase (say from 360lbs. to 530lbs.); but such bread, being more consumable, may not fully suffice. Maize (Indian corn) meal, however, will, I think, correct this quality in the rice, and so constitute a bread as satisfactory to the stomach as it is wholesome, nutritious, and palatable; while M. Miege Mouries gets out *all* the flour from the bran in the state of *fine* flour (such as to make white bread)—say 85 per cent. of the corn instead of 75, and the bread 110 per cent.; and, if to this we add the increase by rice and maize, we may calculate on 750lbs. of bread per qr. of wheat instead of 526lbs. (or 6lbs. from 4lbs. of wheat, instead of 4.1lbs. as above).

This appears to be the only prospect of getting a "cheap loaf"; for although the produce of wheat increases with the improvements of agriculture, the increase of mouths fully keeps pace with it, keeping up the price of wheat abroad as well as at home, and draining off the Australian gold in return, so as to keep the Bank stores continually depressed.

And even this increase of *bread* will be very gradual. Prejudices are not quickly overcome, and its adoption by family baking will do but little towards the general supply.

Nothing less than its sale by some respectable bakers will be sufficient to give it extensive use. Keeping two kinds: the "wheaten loaf" as now, and the "corn loaf," or "cheap loaf," as here recommended, which would be as white and tough as the wheaten, but not quite the same taste. It would, however, probably soon come to be relished, as by the Americans, who often prefer it. Indeed, it is said there are few tables in the United States where maize does not appear in some form; and the sweetness given by the rice would reconcile the maize flavour, and *vice versa.* I am not aware that the two have yet been used together with that view.

But another objection appears more serious: the much larger proportion of water in the "corn bread." 1½lbs. of rice or maize, or of the two mixed, will increase the bread-produce of 14lbs. of flour from 18 or 20 to 26¾lbs. (of course the latter contains 5 or 6lbs. more water than the former); and, if we had nothing to consider but the actual quantity of nutritive matter introduced into the stomach, the cheapness of the loaf would be only nominal. But there are other considerations. Satisfying the stomach is one very important; easy, but not rapid, digestibility another; and ready and equable miscibility with the articles of diet, a third: so that all may lie pleasantly on the stomach, allowing it to take its time for complete digestion, and prevent nutritive matter from being wasted in the refuse. Many experiments, both on men and cattle, have gone to show the loss occasioned by giving the food in a too nutritious form; so that they now generally mix chopped straw with very nutritive cattle food.

And I think it will be found that bread, constituted as above, will be nourishing enough for general purposes; trusting, as before said, to the maize to make up for the rice in nourishment, while the rice helps the maize in flavour.

SOME PRACTICAL DIRECTIONS.

The first place of these seems to belong to M. Mege Mouries, who increases the quantity, while improving the quality.

He grinds the corn, and bolts (or sifts) it only once, getting out per cent. about—

Fine Flour ...	73
Brown meal	15
Bran	12
	100

The brown meal may contain about 3 of small bran with 12 of flour.

This flour he separates from the branny contamination by fermentation and washing out, viz:

He puts into about 5 gallons warm water (71° Fahr.) ¾lbs. of yeast and 2 ozs. of potato sugar, and lets it work all night (say from 6 in the evening to 6 in the morning) in a warm place (about 71°). With this fermenting liquor he wets the 15 of brown meal, which begins to ferment immediately. After 8 hours (say 2 p.m.) the liquor is strained off through a fine sieve (silk or silver), to carry through the flour and leave the fine bran; and 3½ gallons more water are mixed with the residue, and also strained off, to wash the bran quite clean of fine flour; of which the 15lbs. of brown meal yields about 12lbs. as above stated.

The liquor that runs through with it is then used to make the 73 lbs. bolted flour into dough, after the addition of 12 ozs. of salt; and when duly fermented, it is made up in loaves, and baked.

The resulting bread, when cold, weighs about 110lbs, all white and fine.

There are more details in the French report; but requiring too many explanations for the present occasion. Your readers shall have them in due time, if required.

By first boiling the coarse bran, as directed in our first number, in the water for cleaning out the brown meal, he would probably get 5 or 6 lbs. more bread. And, indeed, the report recommends the retention of the entire bran in the bread where desirable, as not colouring it much when the cerealine is neutralized by fermentation.

2.—POTATO BREAD.

The increase of bread with potatoes is as well known to bakers as to housekeepers; and has been considerably abused when potatoes were cheap, though not so likely at present. Of the many current recipes, the following may be selected, although it might have been more explicit on the quantity of water.

First place 15 lbs. of flour near the fire to warm.

Take 5 lbs. of good potatoes, those of a mealy kind being preferable; peel and boil them as if for the table, mash them, and then mix with them as much cold water as will allow all except small lumps to pass through a coarse sieve into the flour, which will be now ready to receive them. Add yeast, &c., and mix for bread in the usual way.

"This plan I have followed for some years, finding that bread made according to it is much superior to that made of flour only, and on this ground alone I would recommend its adoption, even if potatoes were the same price as flour; but, in addition to that, taking the present high price of flour, and a moderately low price of potatoes, there may be a saving of over 20 per cent., which is also an object worth attending to by those of limited means."

3.—East India Rice Bread.

The mode of increase with Carolina or American rice was quoted in our first No., and I have known it practised here with entire success; only that the bread, sweet as if slightly sugared, tempted the palate as well as the appetite. With East India Rice this is less likely, while it is cheaper and rather more productive.

For 14 lbs. of flour take 1¼ lbs. of good East India rice (it may be tried by boiling 2 ozs. in a pint of water for half an hour; when cold it should be quite a firm substance, and weigh 12 ozs.). Great difference exists in rice for this purpose: I generally find the cheapest the best, broken preferable to entire grains; but it must be well sifted from dust, as the dust of East India Rice is apt to be unpleasant. Boil the 1¼ lbs. of rice in ten quarts of soft water, for at least thirty minutes, keep stirring (or to save that trouble, boil it over steam or boiling water, which will prevent its burning to the bottom); then pulp it through a coarse horse hair sieve: it ought, when cold, to weigh 7½ lbs. Then mix it with the flour, and make bread in the usual way, using 2 ozs. of yeast powder. It will produce, when baked, according to the quality of the flour, from 26 lbs. to 28 lbs. of bread at the following cost:

	s.	d.
Flour (14 lbs.) ...	2	9
Rice (1¼lbs.) ...	0	2
Yeast powder ...	0	1
Baking ...	0	3
	3	3

This bread is very white, and keeps good for upwards of a week.

Rice is often used in bread in the same way as flour, or maize flour, which is a great waste. It does not produce such bread, and rice flour is expensive. Buying it unground and pulping it saves this expense, while increasing and improving the produce.

4.—Maize (or Indian Corn) Bread.

The methods of making this are so various, and the results so important, as to deserve a letter to themselves; which I hope will be our next.

I. Prideaux.

NORTHAMPTON AGRICULTURAL SHOW.

The town of Oundle was thronged on Thursday, Sept. 18, with visitors to the show. Poultry were this year exhibited with the cattle. The meeting was most successful, many of the classes being well filled. The heifers were very superior. The cows were not so good in quality. There was also some excellent competition in the classes for horses. The sheep pens were not well filled, but there were some fine specimens. The show of poultry was large and excellent, particularly in Dorkings, Cochins, and Spanish; and the Aylesbury ducks were of first-rate quality. Amongst the numerous company on the ground, including hundreds of ladies, were the Earl of Westmoreland, Lady Rose Fane, Lady Adelaide Capel, Stafford O'Brien, Esq., and family, &c.

The following is a list of the prizes:—

CATTLE.

Judges: Mr. C. Smith, of Burley-on-the-Hill.
Mr. C. Howard, of Biddenham, Beds.
Mr. Joseph Druce, of Eynsham, Oxon.

Best fat ox or steer, first prize of £5 to W. De Capel Brooke, Esq., of Geddington Grange; second prize of £3 to B. E. Bennett, Esq., of Marston Trussell.

Best fat steer, first prize of £5 to Earl Spencer, of Althorp; second prize of £3 to Mr. S. Wallis, of Barton.

Best bull of any age, first prize of £7 to Mr. W. A. Elston, of Bisbrooke; second prize of £3 to Lord Spencer.

Best bull under two years old, the prize of £5 to W. Harrison, Esq., of Clipstone.

Best cow of any breed, first prize of £5 to Mr. Jos. Robinson, of Clifton, near Newport Pagnell, Bucks; second prize of £3 to Mr. L. Cowley, of Ledgers Ashby, near Daventry.

Best heifer of any breed, first prize of £5 to Earl Spencer; second prize of £3 to F. W. Sartoris, Esq., of Rushden.

Best heifer of any breed, first prize of £3 to Mr. Jos. Robinson; second prize of £2 to T. R. B. Cartwright, Esq., of Aynhoe.

To the cottager for the best cow or heifer, first prize of £2 to Mr. Thomas Brown; second prize of £1 to Mr. John Esam.

SHEEP.

Judges: (Same as for the Cattle.)

For the best pen of six long-woolled ewes, first prize of £5 to Mr. L. Cowley, of Ledgers Ashby; second prize of £3 to Mr. A. C. Keep, of Wellingborough.

For the best pen of six long-woolled theaves, first prize of £5 to Mr. De Capel Brooke; second prize of £3 to Mr. John Shaw, of Huntsbury Hill.

For the best pen of five long-woolled shear-hogs, the prize of £5 to Mr. Shaw.

For the best pen of six cross-bred theaves, the prize of £5 to Mr. A. C. Keep.

For the best pen of five cross-bred shear-hogs, the prize of £5 to Mr. A. C. Keep.

To the exhibiter of the best shearling long-woolled tup, the prize of £7 to Mr. John Shaw.

To the exhibiter of the best long-woolled tup of any age, the prize of £7 to Mr. John Shaw.

HORSES AND PIGS.

Judges: Mr. W. Drake, Holket, Northampton.
Mr. J. Elliott, Heathencote, Towcester.
Mr. J. Langham, Biggin Grange, near Oundle.

HORSES.

To the owner of the best stallion for agricultural purposes that has been used in the county the last year, the prize of £10 to Mr. John Manning, of Orlingbury.

To the owner of the best mare and foal for agricultural purposes, the prize of £5 to Lord St. John, of Melchbourne.

To the owner of the best cart gelding, under three years old, the prize of £5 to Mr. Rowland Wood, of Clapton.

To the owner of the best cart filly, under three years old, the prize of £5 to Mr. Wallis, of Overstone Grange.

To the owner of the best colt or filly, under five years old, adapted for riding purposes, the prize of £5 to Mr. H. S. Cooper, of Harleston

To the owner of the best mare and foal adapted for riding purposes, the prize of £5 to Mr. H. S. Cooper.

PIGS.

To the exhibiter of the best boar of any breed, the prize of £2 to Mr. W. Elston, of Bugbrooke.

To the exhibiter of the best breeding or suckling sow of any breed, the prize of £2 to W. H. Harrison, Esq.

To the exhibiter of the best boar of a small breed, the prize of £5 to Mr. Jas. Marriott, of Floore.

For the best sow of a small breed, the prize of £2 (given by Lord Henley) to Mr. J. Marriott.

THE ROYAL NATIONAL LIFE-BOAT INSTITUTION.

We beg to direct the attention of our readers to the extracts from the "Wreck Register," &c., inserted in another part of this publication, and to the startling facts it reveals. Four thousand three hundred and forty-one wrecks, and seven hundred and eighty-seven collisions, in five years, attended with a loss of four thousand three hundred and forty-eight lives! If anything can illustrate the necessity for a Life-boat Institution, surely it is the melancholy details afforded by this short abstract from the "Wreck Register," especially the alarming increase in the number of collisions, ranging from 57 in 1852 to 316 in 1856, owing in great measure to the increasing number of vessels of every description arriving at or departing from our shores.

Every shipper, every ship-owner, every voyager—whether on business or pleasure—is deeply interested in this question, and ought to be a subscriber to this institution. We might go further, and say that all those who have friends at sea, ought to feel how much the *sense of their security* is increased by the certainty or otherwise that a life-boat is at hand, should a casualty occur to the frail vessel in which they have embarked. A *very large* proportion of the wrecks, and nearly all the cases of collision, take place near the land, and are consequently within reach of the assistance a life-boat would render; and beyond a doubt, were there a chain of those invaluable craft established at suitable distances around the whole of the British isles, as we recommended in our notice of the institution some months since, hundreds of valuable lives might be saved that are now sacrificed annually.

To carry into effect, however, this plan, would require an amount of money ten times that of the income of the present institution; and this must either be raised by increased subscriptions from those who are interested in it, or by the Government. With regard to the first, we fear the majority of those most deeply concerned, namely, the shippers and ship-owners, rest satisfied with having insured their *property*, and care but little about the loss of *life* in case of a wreck. On no other principle can we account for the comparatively small support the Life-boat Institution receives from those classes, and the perfect indifference they display for the safety of the men who thus peril their lives in the promotion of the wealth of their employers. This neglect and indifference are in the highest degree criminal, and unworthy of the character that the British merchant bears in the estimation of foreigners. Those who thus employ men in hazardous enterprises are bound, in honour, conscience, and humanity, to make their employment as safe and comfortable as possible; but from the recklessness with which the shipping trade is conducted, as detailed in the report, and the rough treatment the sailors meet with on board many of our merchant vessels, the safety and comfort of the men is the last thing thought of by the majority of ship-owners; and provided the ship is insured, the crew may sink or swim, in case of a wreck, for aught they care about them.

Is it therefore to the Government that we must look for the establishment of a continuous and efficient chain of life-boats round the coast? Glad indeed should we be to find this matter taken up by some influential men in Parliament, with a proposal of affording such aid to the Life-boat Institution as would enable it to carry out the views and intentions of its benevolent founders to their utmost extent. Such a measure is far more worthy of the consideration of the legislature than many of the frivolous and expensive matters which are annually made the subject of grave debate. Certainly the statistics revealed in the "Wreck Register" for 1856, afford a subject demanding the attention of the Government of a country, whose national wealth and prosperity have ever depended upon, and been derived from, our mercantile marine.

THE WRECK REGISTER AND CHART FOR 1856.

In accordance with the practice which has been observed for some years past in the *Life Boat Journal*, we give in our current number a synopsis of the wrecks and casualties which have taken place during the past year on the coasts and in the seas of the British Isles, accompanied by an engraved coloured chart, distinguishing the sight of each casualty. The register has been presented to Parliament by the Board of Trade, and a more complete and interesting document has never been published.

In the year 1850 the first Wreck Register in this country was published. It was compiled, we believe, at the suggestion of Captain Washington, R.N., the present Hydrographer of the Admiralty. The startling facts which the register has in each successive year since disclosed, have awakened general attention, have several times been discussed in both Houses of Parliament, and have resulted in the establishment on our coasts of a system of life-boats for the preservation of the lives of unfortunate shipwrecked individuals, that has never had a parallel in this or in any other country. In this philanthropic work, in which the Royal National Life-Boat Institution has taken so prominent a part, much remains still to be done; and if we expound correctly the views of the Committee of Management of that Institution, we believe that it is their fixed determination, if aided by the support of the public, to leave no exposed point on our dangerous coast unprovided with an efficient life-boat establishment.

The following list gives some details of the work of destruction during the past five years:—

	Wrecks.	Collisions.	Total.	Total Lives Lost
Wrecks and Casualties in 1852	958	57	1,015	820
" 1853	759	73	832	989
" 1854	893	94	987	1,549
" 1855	894	247	1,141	469
" 1856	837	316	1,153	521
Total	4,341	787	5,128	4,348

Who can contemplate these lamentable details without seeing the great necessity for continued exertion and precautionary measures in respect to the preservation of life and property? The same, too, must be pursued with untiring energy, until the average loss of life and property is reduced to the minimum attainable by human skill.

The number of casualties in each month of 1856 are thus given in the register for that year:—January, 149; February, 154; March, 96; April, 74; May, 57; June, 32; July, 48; August, 51; September, 98; October, 99; November, 129; December, 166: total, 1,153, representing 229,936 tons, and employing 10,014 hands, of whom 521 perished.

These disasters are again thus classified:—Sailing-ships over sea, 546; coasting-ships not colliers, 432; colliers, 139; steam-ships, 34.

Those vessels are again classified so as to distinguish their cargoes, that is—In ballast, not colliers, 108; coal laden, 314; colliers in ballast, 79; cotton, 12; fishing smacks, 10; fish or oil, 19; grain and provisions, 115; general cargo, 139; iron and other ores, 83; manure and kelp, 26; passengers, 11; potatoes or fruit, 15; salt 40; sugar, coffee, spices, tea, molasses, 19; stone, slate, lime, or bricks, 46.

We arrive at the conclusion from these facts that our coasting trade, and our coal-trade in particular, is the most dangerous, and yields one-third of the whole losses or collisions. Indeed it is useless to disguise the fact, that some of our coasting-vessels are a disgrace to us as a nation. Only a few months ago a small schooner from Sandwich, while riding on Bridlington, was so rotten, that her anchor pulled out her bows, causing her, of course, instantly to sink, and her unfortunate crew of 4 hands to perish. And again, on the 8th May last, a small schooner known to be unseaworthy (as we are informed), went to pieces off Aberdovey, on the coast of Wales, before there was time for any aid to reach the crew. May we not presume that rigid inquiry would discover many other similar cases amongst the numerous details in the register, even in addition to the large number stated to have been abandoned or to have foundered from unseaworthiness? Surely a remedy might be found for such a disgraceful state of things.

An analysis of the tonnage of the wrecks on our shores during the past year further tends to prove our statement. It is as follows:—

Vessels under 50 Tons	145
51 and under 100 „	338
101 „ 300 „	472
301 „ 600 „	137
601 „ 900 „	34
901 „ 1,200 „	15
1,200 and upwards	12

The exact site of each disaster is given in the Register; and to prevent the possibility of error on this point, the Wreck Chart, which accompanies it, clearly and distinctly points out the locality of the wreck. What a tale of woe and misery this death-chart brings to light! Who can think of it without feeling a desire, by every means in his power, to lessen the causes of those black dots on it? The following is the summary:

	Vessels.
East Coast—Dungeness to Pentland Frith .	506
West Coast—Land's End to Greenock .	307
South Coast—Land's End to Dungeness .	119
Irish Coast	155
Scilly Islands	12
Lundy Island	11
Isle of Man	5
Northern Isles, Orkney, &c., &c. . . .	38

We believe, that after this additional evidence, a proposition will be submitted to Parliament in the early part of next session, to build a harbour of refuge on the north-east coast of Scotland; another on the north-east coast of England; and a third on the west coast of England.

The return distinguishes the force of the wind at the time of each disaster, which is instructive so far as it proves that it is not the storm or the hurricane that destroys the largest number of vessels; and that more danger is to be dreaded from the carelessness, neglect, or incompetence of man, than from the act of God.

The following table gives a list of the wrecks and casualties, excluding collisions, which have involved total loss, distinguishing the cause of loss:—Stress of weather, 148; abandoned from unseaworthiness, 17; foundered from unseaworthiness, 37; want of lights or buoys on coasts or shoals, 10; mistaking lights or bearings, 10; fog or current, 38; defective compasses, 5; defective charts, 3; error in course of reckoning, 6; error in judgment, 12; ignorance of coast, 3; errors of pilots, 7; want of pilot, 3; neglect of the lead, 21; want of caution, 11; intemperance, 2; general negligence, 9; missing stays, 10; striking on sunken wreck, 1; burned, 4; capsized or sunk, 4; cause unknown, 7—total, 368.

Thus we find that no less than 220 ships were totally lost or stranded in 1856 from errors, unseamanship, or drunkenness, or other preventible causes, in addition to those from stress of weather. The lives lost from these disasters are not given; but the widows and the orphans of some of these unfortunate crews in our seaports are two numerous to elude our observation. If one out of every nine ships is lost from inefficiency, whose duty should it be to see that crews are fully equal to their duties? We have often contended that every English ship, before leaving port, should be submitted to inspection, in order that it might be certified that the ship is fully manned, and that means both simple and efficacious exist on board for the safety of the crew and passengers.

When considering the above details, is it not a matter for serious reflection that there should have been 17 vessels abandoned from unseaworthiness, and 37 to have foundered from the same cause? Those 54 vessels, lost from unseaworthiness form 5 per cent. of the whole casualties, or 17¼ per cent. of total losses. Whole crews are frequently sent to prison, in this enlightened country, for refusing to go to sea in unseaworthy ships; and now it is made clear that out of 368 vessels totally lost in 1856, no less than 54 are officially affirmed, on inquiry, to be unseaworthy. But this is not the whole truth; we must add the vessels improperly found to that list, and there we see a little more of the mischief:—Totally lost or stranded from defective compasses, 14; ditto from defective charts, 5; ditto from improper stowage of anchor, 1; ditto from combustion of steam-coal under hatches, want of proper ventilators 10; ditto through leakage, 87—total, 117.

A ship will leak at sea from straining, but the large number of 87 vessels in one year on our coasts seems too great a per-centage for such a casualty. A ship sent to sea with defective compasses or charts, and lost from that cause, ought to be classed under the head of unseaworthy.

If all vessels were inspected by competent authorities before sailing, we suspect that the condemnation of existing vessels and equipment would be wholesale. We judge so from various reasons. Old vessels are made to do duty till they founder at sea. When a vessel is fit for nothing else, she is put in the timber trade, and the fearful accounts we read of water-logged ships follow as a necessary sequel.

We thus, from the preceding consideration of defined causes, can come to no other rational conclusion than that more ships are wrecked from oversight, ignorance, neglect, and spurious economy, than from the dangers of the sea. Did we require more convincing demonstration of this attestation, we have but to refer to the table which gives the force of the wind; and as we have before remarked, this is a highly instructive part of the paper before us—thus: Dead calm, 19; light air, and slight steerage-way, 22; light breezes of 1 to 2 knots, 58; gentle breezes of 3 to 4 knots, 49; moderate breezes of 5 to 6 knots, 98; fresh breeze with royals, 154; strong breeze, single reef and top-gallant sails, 140; moderate gale, double reefs and jib, 101; fresh gale, triple reefs, 60; strong gale; close reefs and courses, 184; whole gale, close-reefed main topsail and reefed foresail, 147; storm, under storm staysail, 77; hurricane, bare poles, 44; total, 1,153. This proves our statement; for out of 1,153 ships, only 268 were lost in a whole gale, storm, or hurricane, and only 121 by the conjoint agency of the two latter. We now approach the most lamentable feature in these returns. Of the number of lives more or less imperilled, we find them set down as 2,764, of whom 521 were drowned. Those saved by the mercy of God and the help of man were thus rescued—

	Persons.
By life-boats of the Royal National Life-boat Institution and local bodies.......	362
By luggers, coast-guard boats, small craft, and ships' own boats........................	1,184
By ships and steam-vessels	407
From shore by ropes, rockets, mortar apparatus, &c..	262
Individual exertions of a meritorious character	28

These facts clearly illustrate that great exertions are constantly being made by our life-boat crews, boatmen, and fishermen on the coast, to safe life from shipwreck—facts which should call forth the acknowledgments of the community at large, as showing most satisfactorily what can be accomplished in this good work by sustained and well-directed efforts. And surely an institution like that of the National Life-boat Society—in addition to having granted rewards for rescuing 473 persons from shipwrecks, whose life-boats have been the means, during the past twelve months, of snatching 129 of our fellow-creatures from a watery grave—has only to make its claims extensively known to be fully appreciated and liberally responded to by the affluent and humane throughout the land.

We thus appeal on behalf of the cause of humanity. But we ought not to be required to appeal to shipowners and underwriters, to see that their ships are properly manned and furnished; for we believe that it is their best interest which is consulted, in attending to that manifest duty.—*From the Journal of the National Life-boat Society.*

AUTUMNAL FALLOWING OF LAND.

The autumnal fallowing of land was lately treated in so able a manner at the London Farmers' Club, that numerous inquiries of correspondents have since followed. These evince the great interest taken by farmers in the subject, and induce us to suppose that the practice which has been long established upon farms in highly cultivated districts of the southern and eastern portions of the kingdom has not yet become such in other quarters. We therefore resume the subject at this season, especially as the early harvest offers unusual facilities for carrying the plan into effect. This arises from the dryness of the season being much greater than for several years preceding occurred.

Autumnal fallowing resolves itself into two heads: viz., the preparation of the soil for root and other vegetable crops in the succeeding spring; and, again, by merely stirring the surface, to cause the seedling weeds to vegetate, and thereby easily afterwards to effect their eradication. The extent of either of such operations will depend upon the nature of the soil, and its intended future application. Suffice it, that the practice we advocate upon a light description of land calculated for the growth of turnips and green crops is, that all the land upon which corn has been grown in the present year shall be operated upon before the season for putting in wheat has arrived. From this of course we except the land in young seeds, and all those pieces already in process of cultivation by crops of mangold wurzel, turnips, cabbages, or coleworts.

The advantage of early rye for sheep-feed in the spring, or for mowing green for foddering horses and neat stock in April and May, deserves the first consideration; and as the removal of the crop takes place, it becomes immediately necessary to sow the land with turnips. Autumnal cultivation, therefore, is requisite upon such lands as are designed for its production. Before we proceed, it will be right to state that, as this crop requires a full depth of well-pulverized soil, it will be found cheapest and best to plough the land destined to receive it in the first instance, and then to bring about a thorough pulverization by the assistance of the scarifier, harrows, and rollers.

It will be necessary to consider the advantages to be derived by the use of the scarifier upon being brought into competition with the plough; and we venture to assert that the latter implement is both the cheapest and the best for bringing land into a state of good tillage. The former is adapted to such work where imperfect tillage is sufficient—viz., by merely breaking the surface, so as to enable seed weeds freely to vegetate; and also to a certain extent for eradicating couch and other fibrous-rooted plants.

For example, let us imagine a field of tolerably friable land, in which couch has become established to some extent, and in addition that the saw-wort or common thistle is also abundant, with the minor convolvolus, or bell-bine, and many others of like character. Every farmer knows that the scarifier, even if frequently applied, will not so effectually irradicate weeds of this description as would be effected by one operation of the plough; and wherever such is the case, the mere cost is in favour of the latter. By ploughing once, the scarifier then afterwards completes the labour with little effort, and as effectually as by continued ploughings.

After much experience in this mode of cultivation, we have come to the resolution of ploughing as much as possible, in the first instance, all lands designed for the growth of rye, vetches, and vegetable crops, such as mangold-wurzel, Swede turnips, and cabbages—that is unless such lands are free from root-weeds to such an extent as not to interfere with their spring cultivation. And as we find no difficulty whatever in effecting this, we consider that it is equally available by every one else.

The scarifiers and broad-shares are designed for merely surface cultivation, and expeditiously effect that object; but whenever a depth of tillage is required, it can in all cases be effected in a better and cheaper manner by the plough itself.

It would not, perhaps, be expedient to show the difference of cost of each operation in detail, although we are already in possession of the calculations necessary. In a word, two scarifyings, from 4 to 5 inches in depth, will each require double the horse-power of an ordinary ploughing; consequently, so far as the labour is concerned, little, if any, difference in point of cost takes place, as the one accomplishes by a single operation four times the quantity of the other. If time is gained, it must be at the sacrifice of power, and *vice versâ*. But, inasmuch as it may be necessary to break up the surface quickly after the removal of the grain crop, then the scarifier more expeditiously effects the object, and frequently, when the surface of the soil is covered with small weeds, the scarifier does the work in the best manner, by exposing them upon the surface to the action of sun and air, rather than by ploughing them in beneath the furrow.

Experiments have been carried out for several years with considerable care, and the results noted. Accurate calculations have also been made, and, after fully weighing the results, it has been found that the operations effected in conjunction with the plough have invariably succeeded better than those carried out by the scarifier alone, and also at a much cheaper rate.

During the latter part of August, and throughout September and October, the seeds of most of our natural grasses and many of our most noxions corn weeds, both annuals and perennials, enter into active vegetation. It becomes necessary to promote the growth of the former by scarifying the surface as expeditiously as possible, and which is certainly best effected by the scarifier. But this becomes more especially applicable upon those portions designed for grain crops in the following year. It might even be advisable to carry out the system upon those lands designed for roots, keeping in mind that the plough is to follow as soon as it can be introduced.

From the harvesting a crop of early rye in the middle of July, to the conclusion of the harvest by the end of August, much labour will be required upon a well-cultivated farm. The rye land will come into early cultivation for the swede and common turnip or coleworts, and it will be necessary to complete this business in a fortnight at furthest. Then will follow the preparation of the land for the reception of the early rye by the first week in September. Land in beans and peas will have to be cleared from surface weeds, ploughed, and scarified as a preparation for the ensuing wheat crop. Land designed for mangold-wurzel, early swedes, and potatoes, will require from one to two ploughings per acre before November, with repeated scarifyings and harrowings, to eradicate the couch and root weeds. All the land designed for oats, peas, or beans should have a scarifying and harrowing; so that in addition to the labour arising from the carrying on manure for the wheat crop, the greatest activity must prevail until the period arrives for putting in that crop. All this cannot be effected unless the plough teams are kept constantly going during the whole of the harvest month. At that busy season the operation of the plough and scarifier should never cease. The ploughmen's services ought never to be engaged in harvest work excepting at the times of carrying the corn, or whenever the horses are required at other descriptions of work that cannot well be deferred. The old practice used to be for the ploughmen to commit themselves for a month or five weeks to harvest work entirely; during which period the horses were unemployed except when actually required in carrying the corn. By this neglect of the means at the proper time, the land was necessitated to the operation subsequently of a whole summer's fallow. Now, however, that the theory of cultivation becomes better understood and has been reduced to practice, it is not found necessary to allow lands to remain for a whole year in fallow, to the loss of a valuable root crop, and a greatly increased outlay both in time and labour.

THE EDUCATION OF THE FARMER VIEWED IN CONNECTION WITH THAT OF THE MIDDLE CLASSES IN GENERAL: ITS OBJECTS, PRINCIPLES, AND COST.

What a fine comprehensive term that same "*farmer*" has gradually become! Would any one now dare to define exactly what it does, or what it does not mean? *Farmer*, a tiller of the soil —who tills three thousand acres, who has capital in proportion, and headpiece to match—who unites with the position and manner of the gentleman the innate heartiness of the English yeoman. Or, *farmer*, a poor hand-tied struggling man, in social rank and intelligence hardly one whit superior to his own labourer, who contrives to just "live on" the small holding he has somehow or other got into. Or, *farmer*, again, a dashing, scientific man of business, who carries all before him by a coup-de-main—who teaches people their own trade without ever deigning to learn it himself, and shows them how to live well by it, whilst he lives by something else. We have all these, and many more, varieties at present flourishing on English ground. In fact, agriculture never before was so much in fashion. Men talk it and preach it continually. Next to telling you what a horse is worth, or a prime minister should do, there is nothing we all speak to with so much complacent self-satisfaction as to what a farmer is, or what he ought to be.

In a word, this bringing the man up to what he ought to be is the great point. How shall we educate the English farmer? And here in a moment we fall back, faint at the very vagueness of the title. To fit a young gentleman for such a state of life, must still surely be no such great difficulty after all:—Three or four years at a good public or private school; then a term or two at Cirencester, or with Mr. Nesbit; and after that, as a finish, two or three years more with Mr. Hudson of Castleacre, Mr. Hutley of Witham, Mr. Barthropp of Woodbridge, or any such well-known man, who will not refuse to take a pupil or so. Keep him a good horse to ride, so that he may go to the market, and have a day occasionally with the hounds; encourage refined tastes and liberal notions; and start him, just by way of a trial, at three or four-and-twenty, in a three or four hundred acre farm, with ten pounds an acre to "do" it, and something more to play with. And so you have the promise, at least, of a farmer, who shall be no disgrace to his brother the vicar, or his cousin in "the Forty-sixth;" and who, if he really aspire to it, may marry one of his landlord's daughters, or dance at the Cricket Club Ball with the Lady Lord-Lieutenant herself.

Now, shift the siding, and take another picture. Let us look to the farmer who can scarcely afford to give his son any education whatever—who requires the services of the lad the moment they are worth having; and who, if he does send the boy to any place at all, feels that the workman's child at the Charity or National School has often the better of him. Or, consider the perhaps more general medium between these two—the young farmer who is sent to a "Commercial Academy," and who is educated with no more attention to his ultimate position and pursuits than if he were intended for a clerk, a shopkeeper, or a merchant. Nine times in ten, in fact, at such a "Seminary" the routine of his studies are all directly referrable to the latter. And thus armed, he returns home, most probably to stay at home and learn his own business as he may, having so far learned little or nothing about it. We will not say as a rule that, non-apprenticed to his own father, he picks up this essential knowledge in rather a loose unsatisfactory sort of way. Too often, however, he does. To a youth just verging on manhood, parental control, if exercised as it might be, is not always of the strongest. And thus our "Commercial Academy Farmer" learns mostly what he likes, and leaves alone what he does not like. If he succeeds against all these disadvantages, as we are happy to say he frequently does, great the credit due to him. If he fail, we may safely assume the system, or want of system, has something to do with it. He has not been brought up to, or has not been *grounded*, in his business. And a farmer, in this age, we take it, should be as duly prepared for his profession as if he were going to the Bar, the Church, or the Counting-house. The triumphs of self-educated men are but exceptional, as few only are equal to such a trial. A real knowledge of agriculture, to be sure, can be but slowly and gradually imbibed; though, with the various extraneous aids and agents now called in, a boy can hardly begin too soon to know something about the art he is to practise.

How, then, to educate the farmer? In these days of education for everybody, shall he still pass unnoticed? At this time, when he is called on to advance, progress, and develop, shall he yet continue to pick up his knowledge by the way-side, and in stony places? Shall he yet be suffered to remain the one marked exception—the *lucus a non*, who is to have the teaching of a tradesman because he is going to be a farmer, or in lack of that, is to have no teaching whatever? MR. T. DYKE ACLAND says *no*. And Mr. Acland, so prominently associated with the success of the Bath and West of England Society, has made that body the means for supplying a want so long felt. As we intimated in our report of the last meeting at Newton, mainly through the agency of the West of England's Journal, the subject of Middle Class Education has come to be something more than discussed. Measures are already being propounded for placing this upon a better footing. True, however, to that interest to whose welfare his labours have been so ably and especially directed, Mr. Acland has devoted a pamphlet to, so far at any rate, the least considered of these important ranks in society: — "The Education of the Farmer viewed in connection with that of the Middle Classes in General: its objects, principles, and cost." It is the first recommendation of this work, that nothing could be written in a calmer, more practical, or more thoroughly judicious manner. Mr. Acland begins by admitting that, to a certain extent, the education of the farmer's sons must be that of other boys. The question is, how far must we distinguish it from others, and identify it with his pursuits in after-life? Let us reflect what the farmer in embryo might learn, and compare it with what he does:—"If we consider on what powers of nature human food depends, it is surprising how many departments of knowledge may contribute something to the result. How plants grow—and how animals feed—why some thrive and others are stunted—are questions as yet imperfectly answered: but they are the subject-matter of the science of Physiology; a science, the comprehension of which implies an accurate knowledge of Chemistry and of the general principles of Natural Philosophy. The constitution of the soil, the varieties of strata, are taught by Mineralogy and Geology. Draining, in its present advanced state, depends on the laws of Hydrostatics. The economy of farm-labour requires the skilful application of the laws of Mechanics, These are all matters of fact, plain, broad, and palpable, entering into the simplest arrangements of a well-conducted farm. But if we go on to more delicate subjects, how much is the produce of the farm affected by the principles of Heat and Light, perhaps of Electricity, by the complicated agencies of climate included in the province of Meteorology! To the subjects already named must be added the diseases of vegetables and animals, and the intricate questions involved in the art of high-breeding. In addition to what belongs to agriculture as a food-producing art, the farmer requires knowledge of the principles which affect the rates of wages, profits, rents—principles taught by Political Economy, but having a most important bearing on the question, 'Will it pay?'"

Admirably as all this is put, perhaps the very best point in it is the deduction at which our author arrives. Instead of running away with his subject, and furnishing his young farmer complete as a natural philosopher, a political economist, a chemist, a geologist, and an astronomer, he comes at once to this sound decision: "The bare enumeration of these subjects is conclusive. *The boy's studies must have some limit.*" What this limit is we shall leave our readers to gather for themselves. It would be impossible for us to do justice to its consideration here. More than this, we are really anxious that farmers should read the pamphlet. It will set them, as it has us, a-thinking—and, as we believe, to a good purpose. It is offered them, moreover, by a man they can trust. By one who, as he said in that telling little speech at Salisbury wishes to hear the farmers speak for themselves, and speaks himself as directly to them.

EFFECTS OF CLOVER-HAY ON ANIMALS.—Some late writers have taken the position that clover-hay produces a most injurious effect on domestic animals, particularly horses; and that to this cause the great increase of diseased horses is to be attributed. We lately heard a farmer affirm that he believed the introduction of clover-hay into general cultivation the greatest curse yet inflicted on the country, and assigned, as a reason for this singular opinion, its effects on animals when used as a fodder. Late English writers have attributed to this kind of hay the prevalence of hove in horses, and the great increase of other diseases that affect the respiratory organs. This is a most important subject, and should receive a full investigation. Clover is too important a plant to be discarded or condemned, except upon the most satisfactory evidence. Its value as a fertilizer and a preparative for wheat, to say nothing of its use for pasture and hay, would demand that it should not be condemned unheard. For ourselves, we have very little belief in the injurious properties assigned to clover. We have used it constantly for pasture and for hay, more than thirty years, and never, to our knowledge, has any animal suffered from it; certainly no horse has been taken with the hove when fed on it, or while in our possession. As hay for sheep, we have considered it unrivalled, and should have no fears that any stock would not winter well with a supply of well-cured clover-hay. And here lies, we think, the great source of objection to clover-hay. It is too often imperfectly cured. To save the leaves and the heads, which are apt to fall in handling or curing, the hay is put into the barn while the large stems are full of moisture or the natural juices, and the fermentation which ensues causes the whole mass to become damp; and if not spoiled wholly, it becomes mouldy, black, and when used raises such a dust, it is no wonder that horses and cattle are choked or their lungs destroyed. Our experience shows that clover may be perfectly cured without losing any of its valuable parts; cured so that when fed out, no more dust will be flying than from timothy or herds-grass, and we shall be slow to believe that from such hay any injury to animals ever ensues.—*Ohio Valley Farmer.*

LAND.

BY AN OLD NORFOLK FARMER.

Of the two grand divisions of the globe, land and water, the former, although second in extent, is first in importance, as constituting not only the natural residence of man, but the chief source from whence he procures the means of his subsistence. The water also teems with life, proper for him as food; but this is auxiliary to that yielded by the earth, and may be dispensed with. On this account, as well as on that of the uncertainty of procuring its produce, the sea—which must always be understood when we speak of water—has never been appropriated otherwise than nationally, being common to all the people around whose coasts it flows. On the contrary, the land has in all ages and countries been individually sought after, and appropriated upon different tenures, which we shall have occasion hereafter to describe, and is esteemed above all other possessions as constituting the most certain and durable property for individuals, and the basis of wealth to nations.

This idea of a property in land is as ancient as the constitution of society. After the Flood we find the sons of Noah separating in order to found different nations or tribes; and under the patriarchal rule which then prevailed, the tracts of country they severally occupied were appropriated by the heads of the tribes for the general benefit. By the time of Abram, however, an individual property in land seems to have been acquired, probably in the neighbourhood of towns, or *cities*, as they were termed; for we find that patriarch purchasing a field and a cave (called Machpelah) of Ephron the Hittite (or Hethite), one of the "sons of Heth," for which he paid "*four hundred shekels of silver current money with the merchant.*" (See Genesis, chap. xxiii.) We have referred to this remarkable piece of ancient history as the first instance on record of a purchase of this kind, and also of the use of money as a medium of exchange. The narrative also, independent of its divine authority, affords a curious and pleasing illustration of the polite simplicity of manners of that early period, and of the honourable character of the affairs of commerce between strangers. It appears by the subsequent history that the "children of Heth" strictly observed the terms of the contract; for, nearly two hundred years after, when Jacob died in Egypt, his sons carried him to and buried him in the same cave of Machpelah.

This appropriation of the land by the patriarchs, and its cultivation for the growth of cereal food and the pasturage of cattle, mark the degree of civilization to which they had attained: whilst, however, population was thin, and society scarcely formed, there was abundance of land for all. This we infer from the case of Abraham and Lot, who went into the land of Canaan together, where, as perfect strangers, they settled themselves without molestation from the inhabitants; and when, from their proximity to each other, disputes arose between their several herdsmen relative to the choicest pastures, Abraham, with the same dignified and disinterested courtesy, told his younger relative to take his choice of the land.

These ancient morsels of history afford conclusive evidence of land having acquired at that early period an intrinsic money-value in certain cases, claimed by individuals; whilst in others it was vested generally in the tribe or nation, the patriarch or head having the disposal of it. We shall see, as we proceed, that this custom has descended to a very late period of history.

If we turn to the history of ancient Rome, we shall find that previous to the law of the twelve tables the land was divided into portions, and given to the freedmen, according to their families; but the lot could neither be alienated from the family nor divided, so that of necessity it descended to the eldest son. Acquisitions of territory by conquest belonged to the community, but they were usually divided amongst the patrician families After the institution of the law of the twelve tables, the inalienability of land was abolished, and the plebeians asserted their right to a more general and just division of it. Agrarian laws were therefore passed for that purpose, and the freedom and divisibility of the land was thenceforth a principle of Roman legislation.

In the woods of Germany the land belonged to the state or tribe, and was distributed by the head of the tribe amongst the military chieftains on condition of military service. The cultivation of the soil was conducted by the serfs or retainers of these chiefs, half of them being alternately so employed, the other half having to follow their lords to the battle. In those times of turbulence and aggression the profession of warrior gave a title to distinction in the state, and military prowess was the certain road to nobility and wealth. A portion of the land was generally reserved as the common property of the people, and any one who chose might cultivate it without molestation from others; but if he left it untilled, another was at liberty to appropriate it. In some instances this common property was used as pasturage by the residents in its neighbourhood; and from these allodial lands, called in Saxon "*folkland*, or *reeveland*," have arisen those institutions in England called "commons," which of late years have been by act of Parliament inclosed, appropriated, and cultivated.

The desire for the possession of land has been an absolute passion in most countries, both civilized and barbarous, but was especially so in Germany. Whilst the population was thin and scattered, there was room for all to possess a portion of the soil, whose industry, economy, or good fortune, enabled them to accumulate the means or secure the patronage to obtain it, and there was no occasion to go beyond their own territory. But when the increased numbers had caused an absorption of the land, or the avarice of the chiefs had led them to appropriate to themselves and families what belonged to the community at large, it became necessary to seek by conquest from their neighbours, or by colonization in unappropriated countries, the means of supplying themselves with this description of property. It was to the application of this principle of aggressive extension, that the Roman Empire owed its destruction by the Goths and Huns. These northern barbarians had outgrown in numbers the extent of country they occupied, and they fixed their eyes upon the Italian Peninsula as the most favoured spot, and the most likely, from the wealth and effeminacy of the people, to become an easy prey to their arms.

The advanced state of civilization and intelligence in Western Europe has nearly put an end to the age of conquest. It is found, that to extend the boundaries of a state in this way is not to increase its riches or security, but rather, by exhausting its resources, and creating a host of enemies, to make sure provision for its own downfall. We find that all those nations which have been most famous for military achievements, and most successful in extending their territories by conquest, have, in the end, themselves become a prey to the spoiler and invader. The history of our own times prevents the necessity of going far back into the past for illustrations of this remark. On the other hand, colonization, if conducted on just and equitable principles in respect to aborigines—whether civilized or barbarous, does not affect the argument—is a fair and legitimate means of disposing of a surplus, discontented, or enterprising population, when it becomes too dense to admit of its procuring with facility the means of existence.

It is to the adoption of this principle that the North American continent and those of Australia and South Africa owe their rapid transition from barren and trackless wilds, appropriated as hunting grounds by barbarous tribes, to countries inhabited by civilized and enterprising people, under whose untiring industry and perseverance the vast wilderness has become a fertile field, and the boundless expanse is yielding to the axe and the plough. Nothing in ancient history can be compared with it, in respect to the rapidity of the transformation, or the amazing growth of the population; and the process is likely to go on for ages, there being extent of country enough to absorb hundreds of millions of inhabitants, without jostling each other, as in the countries of the older continents.

Amongst our Saxon ancestors the possession of land was almost universal with the people. They did not trouble themselves to build many towns or cities, but every family had its tract of land, and built its cottage by the wood-side or near the stream or sparkling spring. They formed small societies amongst themselves for mutual protection; and, according to Kemble,* citizenship, as it existed in Athens and Rome, was unknown amongst them, all their ideas of society being based upon a property in land; and such holdings, whether by purchase, grant, or an appropriation by what at the present day is called "*squatting*" (if this latter did not encroach upon a neighbour's rights), was not disputed. It is evident that such tenure of land was the very opposite of feudalism, which recognizes the Sovereign only as the supreme lord of the soil, under whom all hold their lands as vassals, on condition of "suit and service" constantly performed. This included a variety of acts of homage, besides military service. The system was first introduced into England at the Norman Conquest: William, who claimed the sovereignty of the country in virtue of the will of Edward the Confessor, found it necessary, in order to satisfy his Norman chiefs, to confiscate many of the larger estates of the Saxon nobles, and to distribute them as rewards amongst his favourites, on the feudal principle of military service. These, again, let them out to their retainers upon the same terms of "suit and service."

This feudal condition of holding land by "suit and service," which was at first of a purely personal nature, was, in due time, exchanged or commuted by returns in produce, or, in other words, a rent in kind. Subsequently, when money became more plentiful, the payment of rent was made in that form. Previous to this period, which was very gradually approached, almost all commercial transactions were conducted by barter or payments in kind. So scarce was money at the time of, and before the Conquest, that, according to Maitland, land sold at one 1s. per acre, a fat ox at 2s. 6d., a cow at 2s., a sheep at 1s., a fat hog at 8d. The state of society at that early period, and even down to the fifteenth century, was exceedingly rude and—what we should call—barbarous. Glazed windows were unknown, even in the baronial halls, the utmost luxury of this kind being horn or parchment to the latticed openings.

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* Saxons in England, chap. 4.

The rough walls were left naked, except on special occasions, when tapestry was temporarily hung against them. The floors of the rooms were strewed with rushes or straw, and the beds were of the latter material. Residing in the midst of his retainers, the feudal lord was supplied with provisions, either from the produce of the land surrounding his dwelling, or from the contributions of his more remote tenants. "His expenses consisted in the exercise of a rude hospitality; and the few foreign luxuries which the habits of life then rendered necessary to enjoyment were obtained in exchange for the wool, the hides, &c., of his flocks and herds, in which, from the great extent of pasturage, the country abounded."*

Whilst the feudal system gradually gave way before the increasing size of towns, the extension of trade and commerce, and the accumulation of wealth, and grants of corporations and guilds, with their exclusive privileges, were obtained from the sovereign or the baronial chief, in return for loans, market-tolls, and other similar equivalents, the landed proprietor was acquiring an extension of power from another source, which has since ripened into a despotism as injurious to society as feudalism. This was the practice of creating boroughs for returning members to parliament. The property of these boroughs being in most instances vested in the neighbouring baron or peer, they were as much under his influence as if the inhabitants possessed no rights whatever. By this means, and by the return of men of influence (because they were men of leisure) for the counties, the parliament became the property, if we may use the term, of the landed interest. And this was at length, by the Act of the 9th of Anne c. 5, confirmed to them by law; and from that period to 1832, when the Reform Bill passed, the qualification for a seat in parliament consisted of an income of £300 per annum, arising exclusively from land. Thus was a power and influence acquired which amply compensated the landed interest for the loss of the feudal system, with its many useless, and some ridiculous, privileges. The preponderance of that interest in parliament, although curtailed by the infusion of commercial and monied men into the Legislature, is still too apparent in national affairs.

There still, however, remains a sufficient residuum of feudalism in the legal institutions of this country to fetter the progress of land in its freedom of action. The law of real property, by which the descent of landed estates by primogeniture is enforced, and which was the very stronghold of feudalism, is as much in force as ever; and the principle of an inalienable possession held under the Crown upon condition of "suit and service" is still retained in the text of our law books. Virtually, also, as a national custom, it is made the basis by the landed aristocracy of all their family arrangements. This unjust—because unnatural—law of primogeniture acts in various ways to the detriment of society at large, as well as to the families of the aristocracy. It prevents the proper management of estates, by compelling the owners to avoid investing their capitals in them in order to make provision for the younger branches of their families, who would otherwise be left destitute at their decease. On the other hand, it disinherits those younger branches; and, in case of the failure of male issue, alienates the property altogether, and awards it to a nephew or a cousin, or perhaps some still more distant relative previously unknown to any of the family. It throws a numerous class of persons, unused to, and unfit in most cases for, business of any kind, upon the public, who, by the influence of the landed interest in parliament, find all places and emoluments worth having usurped and appropriated by, and for the benefit of, these scions of nobility—in most cases incapable of, and in all above, fulfilling in a proper manner, the duties attached thereto. By this means every department of Church and State—the law, the army, and the navy—are totally deprived of that fair competition which elicits talent and excites emulation. By it also the pension list has been absorbed for the benefit of persons wholly unworthy of it, being filled with the names of every aristocratical grade, from the noble peer, who purchases his pay by his sycophancy, and receives it with kid-gloved hand and a contemptuous *sang froid*, down to the lady, who, as a celebrated orator expressed it, "humbleth herself that she may be exalted." It is impossible, with the great increase of commercial wealth, the enlightenment of the agricultural class, the changes that are taking place daily in the political and social condition of the country, and, above all, the declining preponderance of the landed interest in the Legislature, that this enormous evil can long continue to disgrace the statute book. It would be a graceful act of justice if the landowners would themselves take the initiative and annul it. From the lawyers it cannot be expected to originate. Their emoluments arising from it are too great to allow us to expect them to advocate a reform which would sweep away a large portion of their revenues.

Two remarkable consequences have arisen out of this relic of feudalism, which have, in fact, produced an extensive change in the character of the occupancy of land. The first is, the annihilation of the class of yeomen by the absorption of the small estates into those of the neighbouring aristocracy. The second is, the extension of the class of tenant farmers holding under the large proprietors on different tenures, but for the most part "*at will*." These two events require further explanation. It is a singular feature in the history of Europe, and of the present era, that, whilst under the despotic governments of the continent there is displayed a constant tendency to subdivision of the land, in England, under a free government and limited monarchy, the tendency is in the opposite direction, and to the aggregation of the land into large estates. The following observations of an intelligent and well-informed writer* will put the reader in possession of the facts relating to this singular feature of the times:—

"In Flanders, Holland, Friesland, about the estuaries of the Scheldt, Maese, Rhine, Ems, Weser, Elbe, and Eyder; in a great part of Westphalia, and other districts of Germany; in Denmark, Sweden, and Norway; and in the South of Europe, in Switzerland, the Tyrol, Lombardy, and Tuscany, the peasants have from very early times been the proprietors of a great portion of the land. France and Prussia have, in our times, been added to the countries in which the land is divided into small estates of working-peasant-proprietors. In every country of Europe, under whatever form of government, however indirectly and remotely affected by the wars and convulsions of the French revolution; and however little the laws, institutions, and spirit of the Government may as yet be in accordance with the social state of the people, the tendency during this century has been to the division and distribution of the land into small estates of a working-peasant-proprietary, not to its aggregation into large estates of a nobility and gentry. This has been the real revolution in Europe; the only exception to which is Great Britain. The tendency with us during the present century has been directly the reverse: it has been to aggregate even small-tenant occupations into large farms. What have been the effects on the condition—on the moral and physical well-being of the people of these two opposite social systems: of the one of which Great Britain is the type, and now almost the only example amongst the European countries; and of the other, of which the most ancient type, and that which may most readily be compared with the first, is perhaps this country of Flanders?"

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* Introduction to British Husbandry, U.K.S., p. 17.

* Laing's "Notes of a Tour," &c.

"In France and Prussia it has not yet had time to develope itself, being a change but of yesterday....

"This mighty social change, so rapidly developed and spread over the whole continent, is the most important result by far of the French Revolution—the most pregnant with future good or future evil, of any produced by that great event. The rise and fall of dynasties, constitutions, and forms of government sink into insignificance, compared to this all-important revolution in the social economy of the European people—the new social state, as it may justly be called, to which the form and spirit and administration of government and law in Europe must be adapted, if they are to rest on a permanent foundation. The remarkable events of the year 1848 show that the continental sovereigns have not seen, or have misunderstood, the tendency, spirit, and strength of this new social element, which they themselves in a great measure created, and prove, even now, in the beginning of its development, that the old institutions and spirit of the continental governments are not suitable for it, and must be made conformable to it, either by violence or timely adjustment.

"By the French Revolution, in its direct and indirect influence on the governing and the governed of every European country, these new elements have been introduced into the social economy of the continental people—new, at least, in the extent of development and power they have now attained. The first is this general distribution of the land into small estates of peasant-proprietors. The second, as a necessary consequence of the first, is the extinction of the social importance of the former great landholders—the aristocracy, nobles, or gentry—as a third influential body, between the monarch and the people; and the substitution of a new element—*functionarism*—instead of aristocracy, in the social structure, as the support of monarchical government. The third is the *Landwehr* institution, by which, instead of a distinct class of the community being kept up by the state as a standing army, the whole community—all the male population, of age and strength to carry arms—are embodied and trained three years in the ranks of a regiment of the line, as common soldiers, and constitute the main military force of the country.

"These effects are scarcely known to us; and the elements themselves are quite as little known. These elements were sown in war, and are adapted only to, and preparatory for, war, and a military organization and spirit of society. The spirit and principles of our social institutions are more different now than they were in the fourth and fourteenth centuries from those of the continental people."*

Such is the anomalous condition of continental Europe, as compared with that of England; and the motive has been fairly, but not fully, stated by the writer. It has undoubtedly been intended to increase the power of the crown, by breaking down an independent, and therefore dangerous, aristocracy, and the substitution of a body of functionaries immediately dependent on, and paid by, the crown. And, on the other hand, by the division of the estates of the nobles into small peasant-proprietaries, it was designed to give the masses an interest in the state, and thus attach them to the crown and the institutions of the country. "The immediate result in Prussia is, that there are 257,347 estates of from 50 to 240 acres, and 314,533 estates under 50 acres; whilst there are 668,400 Prussians, some of whom have each a small house of their own, whilst the remainder are labourers for others, and do not possess either house or land of their own, but are allowed by their masters a field for the support of one or two cows. It is possible for the poorest young man in France, Germany, Switzerland, the Tyrol, Belgium, Holland, Denmark, Sweden, and Norway to purchase a garden or a farm of his own, if he is intelligent, prudent, and self-denying."

The *Landwehr* adopted in Germany was instituted to meet the conscription-law in France, by which eighty thousand men were annually enrolled, and an equal number, in time of peace, discharged. This system was considered dangerous to the liberties of the neighbouring countries, and it was judged necessary to have an institution of a stringent military character to meet it; and the *Landwehr* was adopted. The danger, however, to the several governments, of thus making soldiers of the whole male population, is a greater evil than even that arising from a warlike neighbour. But the injury to industry is a still greater evil. To take the entire youth of a country for three years, at an age when it is of the utmost importance to acquire a steady habit of industry, and to imbue it with the military spirit, which is opposed to such a habit, must seriously interfere with every department of labour, and detract fearfully from its amount, whilst the martial spirit superinduced by it prepares the people for any mischief that a disposition to revolt may suggest.

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* Laing's "Social and Political Condition of the People of Europe."

Such, we say, is the present critical condition of continental Europe. In England, as we have stated, the tendency of the land is to merge the small estates into the large ones, by which the class of yeomen has been annihilated. This principle has been carried still further by the enclosure of the commons and waste lands, which of right belonged to the poor. Nearly all these ancient institutions, which had hitherto resisted feudalism, and remained a relic of Saxon liberty, have been converted into cultivated fields, and absorbed by the neighbouring nobles or gentry into their estates. The advantage to the country from this general process, is the liberation of small capitals in freehold land, to be invested in it again by its owners as tenant-farmers, or in some other trade or commercial enterprise. We have seen, during the last fifty years, a new race of agriculturists spring up out of this system, by whom, as tenant-farmers, agriculture has become a very different thing to what it was during previous centuries. The increase of tenant-farmers, and the throwing of many small farms into one large one, have not, therefore, been unattended with extensive benefit to the country, if viewed in a merely commercial point of light. To the owner of an estate it is equal to a power of sale in effect, affording him adequate return for his capital, considering its safety. On the other hand, the occupation of the land falls into the hands of persons of property, and possessing intelligence and enterprise far superior to that of the small yeomen-proprietors of the previous age. By their well-directed efforts it has been rendered more productive and profitable; whilst the same capital being invested, partly in the purchase and partly in the occupation and cultivation of a farm, would, in most cases, be a bar to improvement, and afford the party a bare living.

Whether, indeed, we look at the two systems, and judge of their comparative merits by their effects upon those immediately concerned, or upon society at large, we shall be at no loss to determine which works the best. With regard to the first, in almost all those countries named above (with the single exception of the Netherlands) as having adopted the subdivision of the land, we find the peasant-proprietors in a condition of miserable poverty, compelled to subsist on the coarsest fare, totally unable to cultivate their ground to the best advantage, even if they possessed the knowledge to do so, and in every respect in a social condition far inferior to the agricultural labourers in England. In Prussia, we believe, they pay a land-tax by way of quit-rent to the Crown; or at least they should do so. But when Mr. Jacobs went thither in 1828 as a Government special commissioner, he found that they had been eleven years in arrear, which the Prussian Government had agreed to forego, on condition that they would be more punctual in future; "but," he remarks, "it did not appear that they had been able to fulfil the contract." This quit-rent amounted to from 9d. to 1s. 6d. per acre; and whether any improvement has taken place in their condition since 1828, we cannot state; but we can assume that, compared with the tenant-farmers, or even the farm-labourers of England, their life is one of privation and indigence. We believe the condition of the peasant-farmers of France is equally destitute of those comforts and advantages which the mere possession of land is supposed to confer. Such, at least, is the account given by those who have visited and travelled in that country.

But if we compare the effects upon society at large, and in an economical point of view, the difference is still more in favour of England. We see here the land in the hands of an enlightened, enterprising, and wealthy class, who are constantly adding to the wealth of the nation by improvements which increase the produce of the country. In their hands, and since the large-farm system has been adopted, agriculture has risen in importance, and those practising it have made continual advances in intelligence. Science and philosophy have been brought to bear upon it, in all their strength and efficiency, and every department of the art is being reduced to as much certainty, in regard to the final results, as the nature of any human institution will admit. Information is extending in every direction, on all subjects of interest, through agricultural clubs and periodical publications; so that from a class relying upon traditional routine, looking upon "book-learning," and enlightened experiments as next to a qualification for a strait-jacket and Bedlam, the farmers of the present generation are becoming well-read men, feeling the importance of acquiring knowledge, from seeing its beneficial effects where it is possessed. Agriculture, in fact, is fast rising to what Nature has always destined it to be—a series of operations, every one of which is based upon science, and for the proper performance of which, a knowledge of the principles of science is necessary. To compare the present race of farmers in England to those on the continent of Europe, would be about as incongruous as to place them in juxtaposition with their own ancestors or predecessors of a century back. It is impossible that a peasant proprietary could have raised agriculture, in so short a period, to what it now is in England. The capital, the means of knowledge and enlightenment, the mental stimulus—all these are wanting; and the whole, or at least prevailing idea in the mind of a peasant proprietor, is how to make "both ends meet"; whilst, if perchance that of accumulation supervenes, it is entertained on the principle of a rigid parsimony utterly at variance with that of making a present large sacrifice for a larger prospective benefit.

This argument holds equally good in respect to the division of the land into small tenanted farms. Whatever advantages may have arisen from its adoption in so small a country as Belgium, where society is upon a a very peculiar footing, it has never worked well in the United Kingdom. In Ireland, where the sub-letting and sub-division of the land have been carried out to an extent far beyond what has been done on the continent, it was found that not only were the holders impoverished to such a degree as to be compelled to subsist on the coarsest description of food, but that the landlord shared the same fate; whilst the land was cultivated in the most barbarous manner, from the entire ignorance of the occupiers in regard to improvements. It will scarcely be believed by an English or Scotch farmer that in a district of Ireland, when it was proposed, a few years ago, to use the plough instead of the spade, the proposition was rejected by acclamation, because it would reduce the price of hand-labour.

The famine of 1846-7 broke down the cottier-farm system in Ireland, and the Encumbered Estates Court has transferred the land from the hands of impoverished to those of wealthy proprietors, who have generally divided it into large holdings; and the immediate consequence is, that agriculture in Ireland is fast assimilating itself in character to that of England and Scotland. Nor is this the only beneficial effect; for the late cottier-farmer, now become a labourer, is far better off, labour having risen in value to three and four times its former rate; so that the man who formerly lived solely on potatoes and butter-milk, is now eating cereal food; and thousands who scarcely saw the colour of money from one year to another, receive from 1s. to 2s. 6d. per day, according to the work and the season.

With respect to England, we have ourselves been connected with parishes, a considerable portion of which was in the hands of peasant-proprietors, or let in small allotments. We did not know one of these who managed to gain more than a bare living,* whilst the land itself was in a condition that inflicted disgrace upon both owner and tenant, although the latter was by no means over-rented.

The grand argument of the economists in favour of the small-farm system is, that by it a much greater number of inhabitants are supported than by the opposite. We fully admit that, whilst things go on smoothly, the sub-division of the land is calculated to increase a population; but the question is, what is the social condition of the people under it? and how far are they prepared to bear reverses? The reply to both these questions is to be found in the condition of Ireland up to 1848. Before the famine of 1846-7, it was impossible for the people to exist in a state of greater poverty and wretchedness; and so ill were they prepared for any calamity, that the loss of the potato crop, which would scarcely have been felt by the labouring class in England, struck down the entire rural population, and reduced both the landowner and his tenantry to pauperism, if universal recourse to eleemosynary assistance can be called so.

One great evil of the system arises from the necessity of the small farmer seeking employment from his wealthier neighbour, both to fill up his time and to increase his means of paying his rent. And as he can only obtain it at the very time when his own land requires his attention, he is compelled to drive off the cultivation of the latter until his employer has finished; when it is too late to afford the probability of a good result.

In a national point of view, there cannot be a doubt of the superiority of the aggregative system over its opposite; more especially in a country like the United Kingdom, possessing extensive and flourishing manufacturing and mining establishments. By these, whatever surplus of labour there may be, arising from the increase of the population, it is amply provided for, independently of agriculture; whilst by the improvements introduced, and the substitution of machinery in the more onerous departments of rural economy, not only is a great saving of human strength effected, by which the life of the labourer and a prolongation of his efficiency are rendered more probable, but his hands are freed, to be employed in carrying out other important operations which have hitherto been lost sight of, or neglected.

We are aware that, in former times, when the population was thin and land abundant, when money was scarce and taxation light, the class of yeomen-proprietors we have spoken of were almost the only respectable body of men between the aristocracy and the peasantry, and possessed considerable influence in the state as freeholders. To them, in a large measure, we owe the freedom we enjoy, for they united alternately with the class above and that below them, in resisting the power of the Crown, and in consolidating and securing the rights of the people. But by the changes which have taken place in the constitution of society, and the creation of new and important classes, who by their large and rapid accumulations of wealth have acquired the ascendancy in every department of national affairs, the yeomanry class, if it still existed, would have lost its prestige as an influential political body; whilst, for the reasons we have stated, it would have stood in the way of those improvements in agriculture which their successors, the tenant farmers, have introdused and can alone support.

With respect to France, we are glad to find that efforts are making by enlightened men in that country to raise French agriculture to a par with that of England. Something may be effected in this way by great exertions; but we venture to predict that whilst the subdivision of the land continues to be cherished by the Government as the main support of the throne, agriculture must remain at a low ebb, and improvements requiring much outlay must be confined to the few large landholders who now possess the power, the intelligence, and consequently the disposition to carry them out. Nothing could illustrate the difference in result of the two systems better than the actual produce of agriculture in the two countries. With a territory half as large again as that of the United Kingdom, a soil of far greater average fertility, and a climate more favourable to the growth of cereals, France produces not more than half the quantity of wheat per acre, nor more than half the amount of butcher's meat upon a given area of land, that is produced in England, or even the United Kingdom generally; the proportions being 13½ bushels of wheat per acre in France, and 28 bushels in the United Kingdom, with an equally disproportioned produce of meat.

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* Almost to a man these peasant-farmers were poachers, smugglers, wreckers, fowl stealers, &c., and would turn their hands to any indirect but ready way of making up an income.

With the political effects of the two systems we have nothing to do; but we may observe that there is no evidence to show that the aggregation of land in England has ever been attended with a diminution of security to the crown or the monarchy; that the large landholders of this country do not exhibit at least as much respect for the laws, loyalty to the sovereign, and attachment to the institutions of the country, as any nation in Europe. A celebrated Frenchman who visited England for the first time during the Great Exhibition of 1851, could not help expressing his astonishment and perplexity at the social and political state of our population. "Our institutions," said he, "are far more perfect, and better adapted to the preservation of public order than yours; and yet, with soldiers and gendarmes for ever at your elbow, we can scarcely maintain peace; whilst here, in England, you may walk miles in the most perfect security, without meeting a soldier and scarcely a policeman; your Queen walks amongst her subjects without her Guards, and with only a civil attendant or two; and property to the amount of millions, viewed by tens of thousands daily in this Crystal Palace of yours, is intrusted to the safe keeping of a few officers in blue, who are found perfectly competent to preserve it from depredation! I cannot understand this!"

Just so. No foreigner, upon a *prima facie* view of society here, can understand us. But a deeper insight into our system will show that Englishmen respect the laws because they help to make them; they uphold the monarchy because it is limited; they love the sovereign, because, whilst all powerful to do good, she is powerless to do evil; and they respect the institutions of the country because they possess the power themselves of remodelling them when found defective or corrupt; and all this is effected without political convulsion, or, scarcely, excitement, because the inherent strength of the constitution renders it unnecessary. Under such a system all industrial interests are safe, and especially those of agriculture. Left to his own unfettered efforts, with no official interference to either prevent or promote them, the husbandman labours in perfect security, with the certainty that he is under the protection of just laws, and free from the vexatious interference of governmental edicts and fiscal impertinence.

Long may he thus labour, and reap the fruits of his labour! We want no changes but those which will free the land from those last vestiges of feudalism, the law of entail, and the laws for the protection of vermin called game. We have not denounced this system because there is but *one* opinion upon it amongst rational men, namely, that the men who feed the game ought to have the privilege of eating it or destroying it. When, therefore, these relics of a barbarous age are destroyed, the land of England will have attained its just position as a commercial property, transferable at the will of the owner, and subject to the same claims as other property. Whilst the tenant-occupier will no longer see the fruits of his labour devoured under his eyes, to enable his landlord to enjoy the savage pleasures (! !) of a battue; a pastime as opposed to common sense as it is to common humanity, to say nothing of the previous injustice to the farmer who is compelled to feed the game. Both these systems are doomed, and it is only a question of time that upholds them.

SHROPSHIRE SHEEP.

The disposition of the Royal Agricultural Society to recognize more generally the different breeds of sheep in England, as recently evinced by instituting a prize at the last meeting for any short-woolled sheep not Southdown, has already had a beneficial tendency, inasmuch as it has been the means of bringing more immediately before the public a breed which even now is but partially known, and which but a very few years ago was in utter obscurity. The original Shropshire sheep can be traced to the Long Mynd and the other adjacent mountains in Mid-Shropshire, and in its improved state may be thus described. A small, but wide and well-formed, head, with a good countenance; a dark-grey and somewhat peckled face, with a whitening tendency towards the ears; somewhat erect and thick set in the neck; short, but symmetrically fine, in the leg; broad in the shoulder, with a very deep, full, and well-developed brisket; rather long, and particularly broad and level in the back, with ribs well covered, and of a rounded tendency; low in the flank, with exceedingly heavy hind-quarters, and a leg very thick, round, and low. The average weight at sixteen months would be about 20 lbs. or 22 lbs. per quarter; and a good flock would average from 6 lbs. to 8 lbs. per fleece. Their original mountain breeding has stamped them with a remarkable hardihood of constitution. They will thrive and do well even upon land of a sterile nature, while in more generous districts the rapidity of their growth, and their early and natural tendency to fatten, are most extraordinary. Thickly depastured in the undulating districts of their native county they are ever a source of ready profit to their owners, who, beginning now generally to understand their superiority, tend them with the greatest skill, care, and management. Hence this sheep, hitherto so little known, is now taking its proper place, and the few real Shropshire breeders who have been so indefatigable and untiring in their efforts to produce a perfect animal, have at length been rewarded, by obtaining for them a name and a first-class position among the sheep of this country. They possess, to a singular degree, that quality and symmetry which have made the Southdowns so famous; but are much larger in scale, earlier at maturity, and heavier in their wool-cutting properties. They cannot compete with the Hampshire downs for size, but when weighed against their larger antagonists, the compact and well-developed points of the Shrop render the apparent disparity in size amply compensated for by the actual weight, while in fineness of quality they are very far their superiors. It will be remembered that at the last Royal meeting, the Hampshire down No. 722 took the first special prize awarded to its class; and, being eligible to compete also in the class "Short-woolled sheep not qualified to compete as Southdowns," was shown against the Shropshires, and, with the others exhibited, were defeated by Messrs. Adney and Meire, two well-known county breeders, who carried off two first and one second prize from this class. Mr. Adney's shearling was afterwards let to the Earl of Aylesford for 65 guineas. During the recent sales in Shropshire, as mentioned in the local papers, a very spirited competition has induced very high prices, and a great number of rams from the flocks of known breeders have realised from 20 to 50 guineas each. It has been known that this class of sheep has been most successfully introduced into Ireland, and so valuable has it been found, that an increased demand has this year led to a very considerable increase in the number imported. The rapid march of progress in the productions of agriculture renders it imperative on all breeders to study closely any defects, and by well-applied judgment to remove them; remembering that the production of that class of animal which the soonest comes to the best profit must be a desideratum which cannot be too highly estimated.

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THE DECIMAL QUESTION AND THE HOUSE OF COMMONS' COMMITTEE.

We have adverted on former occasions to the many important questions of internal improvement that would be adjourned to a more convenient season, in consequence of the party struggle which ended in the late dissolution of Parliament. We added, "Who can say what events may take place in that interval to cause a further postponement of them?" These fears have been realized by the Indian mutiny. The Government will be too much occupied, first in putting it down, and then in discussing questions as to the causes of it, and the manner in which India is to be governed hereafter, to have leisure to attend to such humble matters as the education of the people, agricultural statistics, and the establishment of a decimal system of money and of weights and measures.

The last of these questions, moreover, is likely to be retarded by a crotchet which has taken possession of some minds as to the advantages which would be derived from abandoning our present units of money, of weights, and of measures, and adopting the French metrical system. We admit the beautiful symmetry of that system. We admit the advantages which would follow from uniformity in these matters, and, as well as from one language, prevailing all over the world. But, then, one may be considered as attainable as the other. There is no question, however, but that it would greatly facilitate all calculations, if our present unit of money, whether of circulation or account, the pound sterling, were divided throughout by ten; if the yard, the unit of linear dimensions, and the imperial gallon, the unit of capacity, were divided in the same manner. The change would be more beneficial to the rising generation, than to the partially-educated classes of the present, who had their "tables" flogged into them in early life, and have become familiar with the intricacies and anomalies of the present system. The benefits, then, would be the greatest to the young, who would be saved all the trouble and annoyance of mastering the present system; and to the uneducated classes, who, in the calculations required, would be placed in this respect on a level with the rich and the educated. The *ad captandum* argument, therefore, about the poor-man's-penny falls to the ground. The excuse in high quarters for giving the question the go-by has been that the bulk of the people do not demand it; and they never will demand it, *because* they are the creatures of habit. They do not understand the question, and they are not aware of the advantages which they would derive from it. The change, moreover, would be less beneficial to those who are, from long habit, expert in business calculations. They are, consequently, less alive to the evils of a system the absurdities and anomalies of which they mastered in early life, while the possession of such knowledge forms a portion of their superiority, in their own eyes at least, to others. The classes, therefore, to whom the change would be most beneficial are precisely those the least able to ask it, the poor and the young. The question, consequently, must be urged on by the disinterested few. If we wait for a decimal system till it is required of us by the masses, we may wait, like the clown on the river's bank, till the river runs itself dry. The object of this article, however, is not so much the advocacy of a decimal system in general, as the retention of our present monetary unit, and units of length and capacity, divided uniformly by ten and multiplied by ten. Confining ourselves, moreover, to the question of the pound sterling, we are reminded that the number of those who are guided by authorities is greater than that of those who are accessible to argument. To such it may be satisfactory to know that the weight of authority is entirely in favour of the pound sterling, dividing it by 10 throughout, instead of by 20, by 12, and by 4.

The Committee of the House of Commons, appointed on the decimal question in 1853, reported in favour of this. Out of 27 witnesses examined before that Committee, consisting of men the most eminent in science, in politics, and in business, 26 gave their evidence in favour of the retention of the pound sterling as the monetary unit, divided throughout in the columns of our account-books and in our coinage or money of circulation, by ten. The full benefits of the change would only be obtained by the application of the same process to our measures of length and capacity. But the first step gained, the masses would soon see the advantage of the second, and would demand, or, at any rate, readily accept it.

We will begin with a man eminent in science, and versed in intricate calculations demanded by the office of Astronomer Royal. "I can scarcely conceive it possible," says Professor Airy, "except by the most violent and offensive measures, to change the principal money of account from its present value of the pound sterling. An alteration of the value of the pound would unhinge every contract in England. I say advisedly *every contract*; for the *shilling is inseparably connected with the pound*, and every contract which is not made by the pound *is made by the shilling.* In a word, I may say that every habitual estimate, and every long or permanent or important contract depends on the pound." But Professor Airy is a scientific man; this therefore may be deemed what some call "all theory." Let us see what was said by Mr. Thomas Hankey, a Director of the Bank of England. He may be presumed to be a practical man, and, for any thing we know to the contrary, he may be scientific too. What said he? "We must stick," he said, "to the pound." There is a very practical sound, certainly, in that expression, "We must stick to the pound," he said: "it is engrafted on all our notions. It is impossible to oust it." Then, again, we have a scientific and a practical man, Sir John Herschel, the late Master of the Mint: "The pound," he said, "is not only an English, but it is a commercial, unit all over the world. *The pound sterling should be the unit, beyond a doubt.*" "I would *retain the pound sterling,*" said Professor De Morgan, "both for our own association, and because it is so well known all over the world."

"There are many reasons," said Mr. Francis Bennoch, "for retaining our unit of value, or pound, as it is now. The sovereign, or pound, is our standard measure of value: all our debt is reckoned in pounds sterling, and all salaries and estimates of incomes are based upon that unit. It has, besides, this advantage—that it expresses a great sum in a few figures."

The principle herein advocated is that which appears to have guided the framers of the bill now before Parliament for removing the anomalies which exist in the various modes which prevail in different districts of selling corn by weight and by measure, and not only that, but of selling different quantities, whether of weight or of measure, under the same name. That bill makes the use of the imperial bushel compulsory. On that question, though it is somewhat foreign to our present subject, it may be remarked that the advantages of continuing the sale of corn by measure instead of by weight were forcibly put by a correspondent in a recent number. The bushel of corn will vary for each description of grain under different conditions. It is for the farmer to ascertain that weight before he goes to market with a sample, while the miller must, from habitual practice, be able to judge very closely the weight of a bushel, both from its appearance and the manner in which it handles.

THE FIBROUS HEMPS AND GRASSES OF THE EAST INDIES.

Sir,—My attention having been drawn to a very important and interesting leading article in your journal, which dilates largely upon the great advantages which might, with proper care bestowed upon them, be derived from the various fibrous vegetable productions of the East Indies, I would beg to state to you, for the satisfaction of such of your readers as may prove more or less interested in the flax trade, that for many years past, during a long and uninterrupted residence in India, I devoted a large portion of my labour and time to this all-engrossing subject and I believe I may safely assert, that I was one among the first of the Anglo-Indian community who made an autopsical investigation into the subject of the fibrous productions of Hindostan.

It is now thirty-seven years ago, when I was a resident at the station at Cuttarth, in the Province of Balasore, that I commenced growing the bourbom, or Sea Island cotton. This flocculent material being longer in the fibre than that of the growth of the natural cotton plant of Bengal, held out an encouraging prospect to those who were adventurous enough to speculate in the undertaking. The seeds prospered, the shrubs flourished, and after three years they fructified; the pods filled well, and the crops augured happily. But to my disappointment and vexation, just at the critical juncture, when the harvest was about to be insured, the *monsoons* (periodical rains), at the beginning of the month of May, set steadily in, and rotted the whole of the contents of my hopes. The cotton became rusty and black, and although I made every after-effort, and adopted every plan I could devise to restore it, in part, to its pristine purity, all my anxious labours totally failed, and I gave up every after-idea of pursuing a course of cultivation in an article which was likely, in nine instances out of ten, to break down under the best exertions I could exercise to bring it to a state of perfection, or to render it, what I aimed at, a marketable production.

Several friends of mine, about that period, who felt equally sanguine with myself in cultivating the Sea Island cotton plant successfully in India, wholly failed in their experiments, and ultimately abandoned the visionary project, as idle and unprofitable. In a subsequent period I turned my attention to the various hemps and grasses peculiar or indigenous to Bengal. The first, and most general in use, I discovered was the *kiar*, or the fibrous filaments contained in the husks or corticeous coating of the common cocoa-nut, the fruit of the palm. This material I discovered was manufactured into strings, cordage, ropes, and ships' hawsers; the natives finding, upon experience, that it was, in its specific gravity, considerably lighter than common Russian or English hemp, or even the *sun* flax, and when applied to maritime purposes was more durable in its nature, and admitted vessels to ride at anchor, in boisterous weather, more easily than when the same were held down by iron chains or hempen cables. This hemp was also used in the manufacture of door mats, ruggets, and other general purposes.

This species of palm is one of the most useful and serviceable trees growing throughout India. The husk of the nut yields the *kiar* above adverted to. The nut itself produces a cooling and refreshing beverage to the thirsty Indian; the kernel, when exposed to solar heat, yields a large proportion of pure oil; whilst the wood, when subjected to the operation of the shipwright and artizan, is converted into mossoolah boats, dinghees, catamarans, and other maritime and architectural purposes. Of late years this hemp has been largely encouraged throughout the United Kingdom of Great Britain, and has in its various and distinct characters and properties superseded hemp, rush, hair, and other materials in the different uses to which they were through a long course of years customarily applied. In the year 1810, an European adventurer of the name of Bell, then residing in the Black Town, Madras, entered upon a speculation, with a view to establish a factory upon a very extensive scale, on one of the Cocoa Isles, for the exclusive manufacture of the *kiar* and the cocoa-nut oil.

He engaged a coasting vessel to convey him thither, stocked with rice, pigs, and other edible stores, equipped at the same time with mills, engines, and other manufacturing organs and implements necessary for the enterprise. He also took over with him fifty coolies, with whom he intended to colonize this new insular settlement. He sailed in February, after the cessation of the monsoons, and arrived safe and well on the island. For five months things went on prosperously; the men had contrived to work out a large quantity of superior *kiar* hemp, and had manufactured a corresponding weight and quantity of oil. One morning, however, as Bell visited his factory at an early hour, he, to his utter disappointment, found that the whole of the colony had clandestinely taken their departure from the spot, leaving him alone on the island. The men had contrived to construct two long canoes in the jungles, unknown to him, and by this means had effected their escape. Bell was shortly afterwards picked up by a paddee-mar sailing near the island, and was conveyed to Madras. Since that period no one has ever attempted to derive any essential benefit from the natural productions of the Cocoa Isles. Were these marine insular clusters to be thoroughly worked, the profits attendant upon the undertaking would prove incalculable.

The second, and perhaps the strongest hemp in use throughout India, is one little used and less known. It is a coarse, tough, black crinose-looking fibrous material, produced from the sago—a species of palm, which is to be met with principally in the islands of the East Indian Archipelago. It is very seldom this product is to be met with to the westward of the Bay of Bengal; but the Malays use it generally for maritime purposes. Like the *kiar*, it floats in the water, and is extremely buoyant on that element. The piratical hordes, who infest the Eastern gut of the Archipelago, rig their prahus with this material, and find it extremely firm, strong, and durable. It is seldom converted into "contracted strands," but is principally worked into thick ropes, cables, and ships' hawsers, for which purposes it is admirably adapted.

Whilst treating of this particular hemp, it may not be, perhaps, deemed irrelevant on my part, in this place, to revert to a practical anecdote related to me by the late Mr. James Kyd, the eminent shipwright of Calcutta, whose name will be handed down to posterity with every mark of respect and esteem. He observed to the writer that he had upon one occasion a very ponderous anchor to raise from the alluvial soil of the river Hoogly, to which was attached a large floating buoy, to define and mark out the channel of that impetuous estuary. This anchorage had been laid down with the especial object of resisting the almost irresistible rush of the *bore*, which at every spring tide rushes up the Hoogly river for some miles, with a frightful velocity, bearing down small ships, boats, and all objects that it comes in contact with. It rushes at railway speed, the rate being 25 miles per hour. This fitful visitation is produced by the spring-tides of the bay of Bengal coming up from the land heads, meeting in their course the mighty torrents of the great Ganges, descending into the sea at the above point.

Mr. Kyd made, in his endeavours to weigh the *boom*-anchor, three several vain attempts with three separate well-cured new ship's cables, and was about to give up the task till he could adjust a chain to the shaft of the anchor, when he remembered having an old *ejoo* hawser, which had been lying about in the yard for more than three years, exposed alternately to rain and sun. This despised and neglected old cable was applied to the anchor, and by means of a windlass and a small complement of Lascars, was weighed and brought on the deck of the pinnace without the ejoo hawser sustaining the rupture of a single strand. This solitary fact must be allowed to speak in highly favourable terms of the palm hemp of Malacca and its circumjacent isles.

The next hemp that is used in India is the *sun*, which closely resembles that of England and Russia, but presents when dry a whiter surface, and is of a more dry and less oleaginous nature than the two former. It is confined to the manufacture of cordage and strings, but is seldom or never used for shipping purposes. The natives, however, construct their fishing-nets of this material; and the same, when subjected to a process of tanning, by means of a strong solution of the bark of the bubbool tree, a species of *mimosa*, are found to wear well, and become less subject to decay. Mr. Kyd spoke very highly of the *sun hemp* as a native production of the East Indies, but he pronounces it much inferior in tenacity to the products of Russia and Britain.

I come now to the *jute* or *pote*. This is the most common textile material we acknowledge throughout Bengal. It is used for twines, strings, door-mats, goonnee (rice or meal) bags, and has, within the last ten years, been brought into the operation of weaving in this country, being interwoven with cottons, threads, and silks. Being of a glossy complexion, and possessing a fine filament, although not of a very strong texture, it is likely to retain its character in this country for some length of time to come. In the obscure villages in Bengal, where iron nails are scarcely obtainable, the native huts, are as to the bamboo frame work, fastened together by means of *jute* string.

The stems when cut are suffered to steep in water, and after a few days a quantity of fine chesnut bass is decorcitated from the rods; which when pickled and dressed, constitutes a light, bright, shining flax called *jute* or *pote*, which is used very generally throughout India, and when packed into bales, is exported into different countries as a staple article of commerce. *Jute* is the cheapest flax obtained in India.

I now pass to the *Manilla hemp*, the natural production of the wild plantain (*Musacea textilis*). This plant grows plentifully in all the districts of the Phillipine Islands, and the hemp it produces is long, clear, fine, and strong; it is also soft and pliant, and is a favourite flax among the people by whom it is manufactured. It is highly prolific, and if properly attended to might be vastly increased in the quantities above those already made. The same is admirably well adapted for tiller-ropes, and other descriptions of *running rigging;* but for upright and standing purposes, subjected to tar and other *piceous* modes of dressings, it has not been found to answer.

The garden plantain (*Musacea hortensis*) yields a long fine white fibre, fully capable of being converted into textile purposes; but it is more esteemed for the fruit it produces than for any other inherent quality it possesses. It is highly esculent, and when cut into large slices constitutes a grateful course of food for milch cattle.

The *aloe* (*agathe*) (*Aloe spicata*): This luxurant plant grows abundantly in all the tropical parts of India. It produces a long, coarse, white fibre, comparatively strong, but is disposed to snap when pulled out at full tension. This must be termed a grass. The way by which the fibres are separated from the leaves, is by suffering the latter to pass through a press, composed of two grooved cylinders, similar to such as are used in the sugar-cane press; the leaves will be crushed uniformly in going through the cylinders, and the whole of the juices will be abstracted by this process. The leaves must be soaked in water pits, for two days, exposed to the sun, when the fleshy portions will become macerated and rotten, and the bulb, when turned upon the heckle or dressing-comb, will throw out the fibres clear, white, and uniformly equal. The natives do not encourage the aloe grass for general purposes; but there is a particular class of *tantees* (weavers), colonized at the town of Balasore, on the Coromandel Coast, who manufacture a white coarse shining cloth out of the same, to which they give the name of *sannatee*. It is by no means a common feature in the Indian markets.

The *Yucca angustifolia* (Adam's needles) is a sub-species of aloe, which grows wild in all the central and southern latitudes of India. The leaf of this plant runs about two feet to two-and-a-half long, and is furnished with a coarse fibre, similar to those deducible from the agave, but are considerably stronger. This grass makes very strong cordage and ropes, and I once saw 1 cwt. of saltpetre raised from the hold of a merchantman by a rope of this grass one inch in diameter. The juice when exposed in earthen vessels and exposed to solar evaporation, leaves a residuum behind it, which is of a gummous consistency, and possesses all the abstergent properties of soap.

The *morgubbee* is another sub-species of the above family; I first accidentally met with it when I resided in Tumlook, on the banks of the *Rhoop Nanain* river, in the year 1830. The leaf is one foot and a-half long, and contains the finest, and by far the strongest filament of all the aloe family. It grows in some of the moist shaded woodlands of Bengal, but is by no means a common plant. I made some cwts. of beautiful flax or grass from this plant, but never turned it to any favourable account for want of proper looms and persons accustomed to work them.

The *Kurah sylvestris* (wild *pine* apple). The filaments which the leaves of the above plant yields are the finest yet known. The weavers of Malacca construct their cob-web or gossamer muslins out of this material. I have by me at this time some samples of the grass I procured from the leaves of the *Kurah sylvestris*, which, if properly handled, might be converted into cloths or cambrics of matchless quality. The fibre is exceedingly strong, white, and fine, and the Malays know how to turn the same to advantage.

The whole of the above have come under my own observations, during my residence in Bengal, and I feel fully assured that there is a vast field open for useful enterprise and profitable speculation, in the pursuit of arriving at a more perfect knowledge of the proper value to be placed upon the natural products of that great and interesting country.

I am, sir, your obedient servant,

22, Albany-street, Regent's Park, 27th May. D. G.

PATENTED INVENTIONS RELATING TO AGRICULTURE.

At the conclusion of the first of our papers of the present series, we explained the circumstances in which the Patent Commissioners had deemed it necessary to publish abridged indexes of different inventions, two of which had special reference to agriculture. One of these (Abridgments of the Specifications relating to *Drain Tiles and Pipes*, published at the Great Seal Patent Office, 25, Southampton-buildings, Holborn, price Sixpence) we now in the present article propose to glance at.

The first recorded invention bears date Jan. 12, 1619. (No. 11.) The name of the patentee is John G. Berington, to whom is granted "a special privilege," showing that whereas he hath found out the arte of making a certain engine to make and cart clay, all sorts of earthern pipes for conveyance of water on the earth * * * His Ma^tie. doth hereby grant unto him sole power for 21 yeares to make and use the said engines for the purposes aforesaid, paying yearlie into His Mat^'s. Excheq^r. xxvj^s. viij^d. In the next patent, dated June 28, 1725 (No. 480), granted to William Edwards, allusions to form of pipes and methods of laying them, in use at the present day, are met with. The plan adopted was placing a plug of wood of length corresponding to the required length of pipe, in the centre of the potter's wheel, and working the clay round this, the internal character of pipe being equal to the external character of plug. The pipes were made on this plan with such expedition, that fifteen or twenty dozen could be turned off in a day. After the pipes thus formed were dried to a "fitting temper," they were put in a turner's lathe, and "shaped with proper tools to what form and fashion needful, as spicket (spigot) or other waies, so to fit the boured end of the other pipe with a proper instrument, that they fit with all exactness." In another part of his description, the inventor states that another method of joining the pipes together was to taper the end of one so as to fit the bore end of the other, the conical-ended pipes of the present day. The patent granted to John Scott, James Clarkson, William Falkam, and Samuel Mellish, Dec. 21, 1802 (No. 2672), was for constructing sewers, conduits, &c., by means of "clumps." These were composed of earth, clay, &c., &c., or other suitable material, and so formed "that the sides or edges thereof, when made and completed, shall join and fit to each other in an exact radius of a circle of its centre, so that when all the said parts are put together, with or without mortar or cement, the said several clumps will form a direct circle, bearing a pressure inwards on the principle of an arch; and that when the several layers, courses, or distinct circles thereof shall be fitted and adjusted in their proper places, such will form what is called a broken joint in the wall or shell, so that the swivel will alternately clump or join the courses next adjacent to them together, to prevent their removal sideways, such clumping or interlocking being effected by a curved projection on one of the flat sides of each clump, entering a recess in the side of the clump above or below the swivel." A remarkable similarity exists between the plan here indicated and some of the recently introduced methods for building arched or circular work by means of radiated or curved bricks.

The invention of Johann George Deyerlein (patent dated March 22, 1810, No. 2319), consisted of a box or receptacle in which the clay was put, a plunger or piston acting upon this, forced it through suitable openings or orifices, which gave the required form; when pipes were to be made suitable cores were placed in the orifices to give the required diameter. This invention seems to be the first patented in which the plan was adopted of forcing the clay through orifices by means of a piston or plunger. His mode of operating had, however, one inconvenience, namely, the withdrawing of the piston when the receptacle in which it worked was to be re-charged with clay. To obviate this, Joseph Hamilton (patent dated April 28, 1813, No. 3685) secured the use of the *Archimedian screw*, "with a sufficiently deep thread in one or more pieces, and of a convenient diameter." This allowed the cylinder or "clod" to be charged at convenience; and another advantage obtained by its use, as stated by the patentee, was, the materials were subjected to pressure with "less inconvenience from air" than that which attended the use of the piston.

William Haske and Robert Harvey (Dec. 5, 1817' No. 4183) patented improvements in making tubes or pipes, which consisted in the use of a cylinder into which the clay was placed, and from which it was forced by means of a piston through a moulding orifice, fitted with a core so as to form a continuous pipe." So far as shown in the specification, this invention is exactly similar to that of J. G. Deyerlein, already noticed. The same remark applies to several other patented inventions, which we do not here notice.

In the patent granted to Robert Beart (dated May 25th, 1833, No. 6426), drain and other tiles are described as being manufactured by the use of moulds capable of containing sufficient clay for a number of tiles, and provided with a false bottom, beneath which a piston is caused to act when required, and thus force above the upper edge of the mould a proper quantity for forming one tile. This portion is cut off level with the upper edge of one mould by means of an instrument, furnished with a stretched wire, and then a further quantity of clay is forced up. The tiles thus produced, when intended for drain tiles, will only require to be bent over a proper shape or mould whilst moist." This comparatively tedious process possessed another disadvantage in the sheets of clay not being sufficiently compressed so as to allow of unnecessary distention while being shaped over the horse without injury to the material.

December 9th, 1836 (No. 7253), is the date of the patent granted to the Marquis of Tweedale for his drain-tile machine. This has been so extensively used, and has afforded succeeding inventors so many useful hints, that we shall devote a little more space to its description than we have yet given to others. The title of that part of the patent having reference to drain tiles is as follows:—"Forming drain tiles by passing the clay from the feeding hopper between two horizontal cylinders on to one endless web, which passes over a shaping cylinder turned out in the middle to the form of a drain tile; after which the tile is completed by passing between a pair of inclined rollers, and a second shaping cylinder, and is carried by two narrow endless bands beneath a cutting wire, and thence by one endless web to the drying shed." The necessary bend or curve was easily given to the tiles by means of rollers, pulleys, &c., but the principal difficulty met with by the Marquis in perfecting the machine was the cutting of the web into equal lengths. This was at first effected by a frame, to which the cutting wire was attached, moving in guides, and which received a reciprocating motion by means of a lever; this being actuated at intervals by the revolution of a wheel, from the periphery of which a cog projected. On each revolution of this wheel the cog came in contact with the lever, causing the frame and cutting-wire to act upon the web of clay. But this arrangement was found defective, inasmuch as the web having a continuous motion, while the cutting-wire had an alternating and a gradually increasing one, the web was cut not at right angles, but obliquely in the direction of its length. This difficulty was obviated in a very simple and ingenious manner, by taking out three of the teeth of one of the driving wheels which gave motion to the web of clay. This at intervals caused the driven wheel to stop, the stoppage of the web being arranged so as to be coincident with the movement of the cutting-frame while severing the web.

The next patent is that of the well-known "Ainslie" machine, the date being May 22nd, 1841 (No. 8965). Mr. Ainslie took out a second patent for improvements in the first. This we shall notice hereafter, giving in the meantime a brief description of the first patent above numbered. "The clay descends between a pair of feeding rollers (each furnished with a doctor or scraper beneath for grinding the clay) into a case containing a screw, by the revolution whereof the clay is forced into a chamber, and thence through moulds suitably formed to produce the articles required; and emerging therefrom the moulded clay is recarried by a travelling endless web, which carries it beneath a cutting apparatus for dividing into proper lengths for making drain tiles. The roof of the chamber is formed on its internal side with diverging arches: each arch diverging to its corresponding mould receives an embryo shape, and is enabled to discharge itself in straight lines." The nature of the second patent (dated January 18th, 1845, No. 10,481) is as follows:—"The clay, for instance, is conducted by a travelling endless web to a pair of rollers (each provided with a hinged scraper), which carries it into a chamber, and forces it through a mould or moulding surface in front of the same to an endless web, whereby it is carried to the cutting apparatus. A screen (with a descending shield or cleaner) may be placed in the middle of the chamber to separate stones or roots from the clay. When sandy clay or peat is to be moulded into bricks or tiles, rollers with 'roofing slides' (moved in and out by a dam) must be substituted for the plain rollers." The rollers in this machine serve to keep the chamber full of the clay so as to force it continuallly at pressure through the dies, and also to crush the stones and extraneous matters in the clay, and make it of as uniform a consistency as possible. It is essential to the perfect working of this machine, that the clay be well prepared, in order that the head of the different mixing pipes (if more dies than one are used) be as uniform as possible. In the first machines of this kind introduced, the same objection which attended that of the Marquis of Tweeddale's—namely, oblique cutting—was found to exist. This has been obviated by giving the cutter the same speed as the running pipe. Another difficulty arose in the use of plain rollers, when simply non-adhesive clays were operated upon. These were taken up by the rollers uniformly, so that the chamber not being kept filled, the pipes issued from the dies in a non-compressed state: this difficulty was observed by grooving the periphery of the rollers. In November 30th, 1850, (No. 13,376,) Mr. Ainslie took out a third patent for "employing two or more series of circular plates or discs, fixed on spindles or shafts, with the discs of one series entering between the discs of the next series, and revolving in the opposite direction, for crushing and grinding earths, clays, or other materials used in the manufacture of bricks, &c."

Returning to the chronological arrangement of patents we find, under date December 3rd, 1842 (No. 9,538), the patent granted to William Frederick Emeredge, for an apparatus in which the clay could be at once prepared and formed into the desired shape, the operation being continuous. The clay is taken from its natural bed and passed into the pug mill, in which works an "upright spindle 3 inches square in which are set six arms, each 6½ inches broad, except the first from the bottom, which is generally 7 inches. This arm is placed to sweep over the dies within 3-16ths of an inch, the second at such a distance as will convey the clay to the first, and so on to the top. These are all set at an angle of 40 degrees."

In continuation of our summary of inventions relating to drain tiles and pipes, we have now to notice the well-known patents granted to Henry Clayton. The first of these is under date March 30, 1844 (No. 10,132); the date of the second being Dec. 19, 1851 (No. 13,864). The principle of action of the machines made under these patents is very simple and efficient. The clay is fed into the cylinder or body of the machine, in which it is well incorporated, and is then carried down through "screening or cleaning plates" into a chamber from whence it is compressed through the moulding-orifices. Where pipes are made they are passed vertically from the machine, tiles passing out horizontally. The "screening plates" form an important feature in the patentee's machines; the kind usually adopted by him having conical perforations. These plates clean the clay quickly from all stones and other extraneous matter. In an improved form of pipe and tile machine, introduced by the patentee, the screening plates are kept constantly freed from all refuse by the cylinder moving away from the plates after each charge, conveying away with them the refuse matters. This arrangement obviates the necessity of taking out the "plates' in order to clean them at intervals. A continuous filling and discharging of the clay is kept up by the employment of two cylinders. In Mr. Clayton's last patent he claims "improved dies or moulds for forming large pipes and other articles, the cores whereof are supported in such a manner as to leave a clear space for the material over and through the moulding-orifice." In this arrangement the "core" is suspended by a stem, instead of being carried, as in other machines, by a thick bar or bars over the moulding-orifice; thus avoiding all cutting and splitting of the pipes. Another claim in the patent referred to is for "producing socket and other joints in pipes and other articles by forming such articles with an enlargement and extra thickness of material at the end or sides, and when requisite (and previously to burning) removing a portion of the material from the enlarged or thickened end, side, or sides." To effect this "cutting" the patentee claims "tools or apparatus for cutting square, rebated, grooved, tongued, bevelled, chambered, or other form of jointings, on pipes, tiles, and other articles." By these plans the patentee is enabled to form all socketed pipes out of the solid clay, obviating the necessity of forming the body of the pipe and the socket in two pieces, thereafter joining them together; a plan which often resulted in a defective joint.

In the patent granted (April 18th, 1844, No. 10,147), to John Bailey Denton, a method of making tiles and pipes is specified, in which two screws are combined, which act simultaneously in pressing the clay either through suitable moulding orifices, or into a chamber or chambers, from which it is forced through suitable orifices by other apparatus.

On July 30th, 1844 (No. 10,276), a patent was granted to William Ford, for improvements in machinery for making tubes and drain tiles, "by forcing the clay through suitable moulding orifices by the action of a piston working in a chamber into which the clay is introduced." At this period, what are now so widely used and known as "socket pipes" were not introduced. The drain tubes had nothing to secure their connection when laid in the drain continuously, but the ends were simply brought in contact with each other; very slight disturbing influences, therefore, tended to displace them and destroy the continuity of the water-channel. Mr. Ford endeavoured to obviate this by forming a socket in the extremity of each pipe, into which the small end of the contiguous pipe could be inserted. A claim was made for the apparatus employed for this purpose in the patent above noticed. A brief description of its peculiarities may be here interesting. The tube or pipe is formed in the ordinary way, not with an excess of length over that required when finished. A "mandril" and a "mould-box" are provided, the diameter of the former being such as to admit of the tube or pipe passing over it; a shoulder is provided at one end of the mandril, against which the tube rests; a stop is made in the mould-box, of the same form as the socket intended to be given to the pipe. The lower end of the pipe to be socketed is placed against this stop; the mandril inserted in the upper end of the box is then closed, and the mandril forced down, which drives the excess of clay into the moulded stop, thus forming the socket. This method of forming the socket is different from, and has the priority of date of that patented by Mr. Clayton (No. 13,864). We may here notice another method of joining lengths of pipes by forming them with "indented or jagged ends, so that they will interlock and support each other and be prevented from getting out of one continuous line." This formed one of the claims of the patent granted to Jas. Smith and Wm. Gaichar Jolly, dated Aug. 29th, 1844 (No. 10,299). It will be remembered that in the second patent we noticed (No. 480, June 28th, 1725) a method was described for forming the ends of the pipes conically; so that the "tapered" end of one fitted the "bore end" of the other. Robert Beart, in his patent (dated April 24th, 1845, No. 10,036), also claims a method for making the line of pipes continuous, "by making holes or recesses in the ends for the reception of wood or metal pegs whereby they may be connected together and retained at the same level." In the same patent Mr. Beart claims an apparatus for making drain-tiles, the arrangements of which deserve notice here, as, under some modifications, machines fitted with them have turned out very superior work. The machine consists "of a horizontal trunk, or chamber, into which the clay is introduced, and is then forced by a piston through moulding orifices in the end of the trunk. A grating is fixed across the trunk, near the moulding orifices, to intercept any stones which may be in the clay; and the piston is made hollow to receive such stones. The surface of the grating is kept free from stones by means of a knife or scraper, worked by a lever; and by raising a plug, air is admitted into the space caused by the knife or scraper between the clay and the grating, so as to facilitate the return of the piston."

In the patent (dated July 6th, 1846, No. 11,282) granted to F. Ransome and J. C. B. Warren, a machine is described for making tiles "having two horizontal fixed cylinders," each supplied with moulding orifices at one end, and with doors at the opposite part for the supply of clay; the clay is forced through each set of dies alternately by the action of two pistons fixed at opposite ends of a bar. By appropriate gearing the continuous motion of a pinion gives an alternate motion to the pistons in opposite directions.

Mr. Thomas Spencer, in his patent dated April 10th, 1848 (No. 12,115), proposes to use the direct action of steam-pressure upon clay, or other plastic materials, for manufacturing pipes or tubes. "One upright steam-cylinder (furnished with a suitable slide-valve) is fixed on a frame above the cylinder which receives the clay, and its piston-rod extends downwards through a stuffing box, and carries another piston, by the descent whereof the clay is forced through a dod or die at the bottom of the clay-cylinder." In the same patent a claim is made for a method of forming or turning curves or bends in pipes.

The principal features of the patent granted to B. A. Burton (dated June 7th, 1849, No. 12,645) is a method for "consolidating the particles" composing pipes, tiles, &c. The patentee effects this consolidation by taking the pipe as it emerges from the moulding orifice, and passing it through a set of four rollers, having their peripheries turned to such a shape that when placed together they will form a circular hole somewhat smaller in diameter than the pipe which is to be compressed."

In place of clay, Thomas Earl of Dundonald proposes to form drain tubes, &c., &c., of the bitumen petroleum, or natural pitch of Trinidad and of the British North American colonies (the date of this patent is July 22nd, 1851, No. 13,698). Another patentee, William Gilbert Elliott (patent dated October 5th, 1852, No. 238, under the Patent Law Amendment Act, 1852), proposes to make bricks, tiles, pipes, &c. "from the slag of the smelting or blast furnaces of iron-works, or from a fluid mass of the nature of such slag by running the same into moulds, and pressing, stamping, or rolling, and gradually cooling or annealing the moulded masses."

In the pipes formed by the method patented by W. B. Whitton and G. S. Whitton, the sides are not solid, as usual, but have longitudinal openings—the object being to cause the pipes to dry and burn better than when made solid. To carry out this plan, a number of small cores are placed round the main one (the date of the patent is February 15th, 1853, No. 396). Pipes containing a less quantity of clay than usual, but possessed of the same strength, are professed to be made by the method patented by M. H. Blanchard—(under date February 26th, 1853, No. 488)—which consists in making two pipes one within the other, with an annular space between them, the outer and inner pipes being connected together by narrow partitions which run longitudinally along the annular space. The pipes have no flanges or sockets, but are connected together simply by passing dowells into the annular spaces at the opposite ends of each pipe.

The patent granted to John Heritage (dated August 17th, 1853, No. 1921) describes the "application of a mould, die, or mouthpiece containing water, in front of, and in addition to, the ordinary moulding orifices," so that the stream of clay after being wetted with the water shall be smoothed by passing through the mouthpiece.

In making tiles, tubes, or hollow bricks by the machine patented by Humphrey Chamberlain (under date November 8th, 1853, No. 2591), "two or more grooved rollers are placed in front of the opening of a pug-mill or other expressing machine, so as to form the mouthpiece or die; and cores or mandrils are fixed to enter between the grooved rollers. As the plastic clay is expressed, it puts the roller in motion, and the moulded tube, tile, or brick is received by an endless cloth, and carried to the cutting apparatus.

The patent of Bewicke Blackburn (dated June 8, 1854, No. 1269) proposes to form pipes by binding and cementing small slates together in a cylindrical form, so arranged as to brink-joint with each other, hoop-iron or wire being used to bind the pieces together; the whole being cemented with asphalte or other suitable cement.

G. H. Byerley in his patent (dated June 20, 1854, No. 1354) proposes to manufacture tiles, pipes, &c., from "clay or brick earth in a dry or partially dry state (reduced to powder, and mixed with sand, ashes, or other suitable substances) by means of pressure."

Messrs. S. Knight and J. Stubbs (patent dated July 21, 1854, No. 1,604) propose to use steam (introduced into a second die) "for the purpose of warming, and more readily moulding the clay."

For draining land John Norton (patent dated January 11, 1855, No. 71) proposes a novel substitute for the ordinary drain tubes or tiles, in the shape of hard balls, or spheres of clay, burned to a crystalline hardness: these are preferred of a diameter of four or five inches, and are laid in the trench or drain; the interstices formed between them allowing free escape for the water.

The form of joint patented by T. C. Hill (under date June 19, 1855, No. 149) resembles that known in carpentery as the "scarf," the ends of the pipes being cut off at an angle of 45°.

We have now noticed the most prominent of the patented drain-tile and pipe machines. We now glance more particularly at the inventions of various mechanics in this department throughout the kingdom, but which have not been patented.

"THE MECHANISM OF STEAM CULTURE."

Of the varied questions now attracting the attention of agriculturists, none perhaps possesses so much interest as that of "steam culture." Men anxious for the advancement of that which is the most creative of all the arts, see in it a new power, by which they will be enabled, not only to receive a greater increase of products from land already under cultivation than that which it now yields, but by which they can bring to the service of man the waste places of the earth, raising tracts now gloomy with sad sterility to smiling corn-fields and to pleasant pastures. In view, indeed, of the wonders which the power of steam has effected in other departments, and of the triumphs which it has enabled man to gain over obstacles otherwise insurmountable, it is not surprising that the mere idea of its application to the purposes of land culture should call forth the most sanguine expectations of those interested in the development of so powerful an aid. It is a theme which is calculated to awaken the dullest intellect, and send it forth to roam in the fields of conjecture; it is pregnant with interest alike to the man of science, the political economist, and the philanthropist. In truth, it is impossible to over-rate the importance of the question of steam culture; and although men may, in the first blush of the new thought, run riot in conjecture as to its powers, and claim for it triumphs which it may never realize, yet the very least service which it is capable of performing—not here asserting that such can or cannot be effected in our own day and generation—will be so great, so pregnant with importance to us as a nation, that they may be allowed a little licence in anticipating its triumphs or in describing its powers. The field of inquiry which it opens up is wide enough to compass all the flights of the fanciful, or the hard-working thoughts of the matter-of-fact man. To glance then at the projects and propositions which have been recently brought before the public in connection with this important department of agricultural economics, and the prospects which they afford of success, may be useful and suggestive to our readers.

From the title of our paper it will be observed that we propose to notice the mechanism of *steam culture*—not that of *steam ploughing* merely. The distinction, be it noted, is an important one. The first term is thoroughly comprehensive; it includes all mechanism by which the land is to be cultivated, whether this may be simply an adaptation or modification of existing implements and machines, or constructed on entirely new principles: it includes plans for adapting the new power to the old plough, and those in which this implement is condemned, and a new mode of operation, founded on new principles, proposed to be substituted for the peculiar work which it performs. The term, then, is wide enough to comprehend plans the most diverse in character and distinct in principle. The other term—steam ploughing—on the contrary, denotes at once the specific character of the plan adopted or proposed; it is a necessity of the implement employed, and defines or should define, without any vagueness, the character of the work performed.

For the purpose of our paper, the mechanism of steam culture may be divided into two classes—first, that which comprises mechanism arranged to prepare land in a manner essentially distinct from the operation of the plough, "rotary cultivators" and "digging machines" coming under this class, these being either worked by the power of horses, or made to progress over the land by that of steam specially applied; secondly, mechanism by which the cultivating implement, "plough," "rotary cultivator," or "digging machine," is dragged over the land by the power of steam. In the first of these classes the steam-engine which works the implement passes over the land, the progressive motion being adjusted to the rate of working the cultivator; in the second class the steam-power is stationary, the cultivating implement alone having motion. Leaving for after-consideration the principles involved in cultivating land, and the discussion of the best method of carrying these principles into practice, whether by means of the plough or by rotary or digging apparatus, we now proceed to the description of the most important of the patented plans of steam culture coming under the first of our divisions.

It may be as well here to note that in offering these descriptions we do not intend explaining their arrangments or the principles of their action, or to make comparisons between what may be called "rival plans;" the object of our paper being to supply the reader with a record of what has been attempted. The utility of this record we have endeavoured to illustrate and enforce in the first paper of the present series.

The reader desirous of information with reference to the early patents (the date of the first patent being as long ago as 1630) may consult with advantage a lucidly drawn-up list prepared by Mr. Burness, well known to our readers for his mechanical abilities, appended to

Mr. Fowler's paper "On Cultivation by Steam, its Past History, and Probable Future," delivered before the Society of Arts, Feb. 1, 1856. We propose, for the economization of space, to notice patents of comparatively recent date only, the first selected being that of Mr. James Usher of Edinburgh, 1849 being the date of his patent. Although this machine has been already fully described in this journal, a brief recapitulation of its peculiarities may be useful here. The cultivating part of the machine consists of a series of what the inventor calls "ploughs," attached to plates or discs fixed on a central shaft. These ploughs have a strong resemblance to the ordinary plough, inasmuch as the mould-board, share, and coulter are all represented; but their action in the soil is essentially different. Understanding as the peculiar and unvarying result of the common plough the turning over of the slice of the earth, and laying it at a certain angle, the "tilling" part of the machine now under consideration can scarcely be called ploughs, as the work they perform is essentially distinct from that of the ordinary plough. As the discs to which those tilling parts are affixed revolve, the points of the shares and coulters penetrate the earth, tear it up, pass it over the mould-board, and leave it in an inverted state on the soil. The action is therefore more, as we understand it, a stirring than a ploughing of the soil. There are three tilling parts attached to each disc, each of which comes successively into action; and as there are several discs on the main shaft, each with its set of "tilling parts," the "ploughs" are so arranged that no two of them come into action at the same time. These "tilling parts," however, serve a double purpose: they act as propellers also; for as the paddles of a steam-boat enter into and are resisted by the water carrying the boat along, so in like manner do the tilling parts of Mr. Usher's machine enter the earth; which offering a resistance, causes the machine to which the tilling parts are attached to progress over the land. Thus by the ingenious adaptation of a mechanical necessity two important purposes are attained—first, progression over the land to be ploughed bringing successive portions of the soil under the action of the ploughs; and secondly, the accurate self-adjustment of the speed of progression to that of the ploughing or tilling implements. It is unnecessary here to describe the gearing by which the motion of the engine is commucated to the central shaft bearing the plough discs: suffice it to say, that the inventor seems to have well considered the whole of the mechanical arrangements, so as to meet all the inquirements of practice. Thus, for instance, by a simple arrangement the depth to which the ploughs penetrate the soil can be easily adjusted; or they can, if necessary, be lifted up completely out of contact with the soil. An arrangement is also provided, by which the machine when at the headlands can be turned in a comparatively small space.

Taking the patent machines in the order of their dates, we come now to describe the "rotary" cultivator of Mr. Bethell (Dec. 3, 1822, No. 949; the cost of the specification of this patent is 10½d.; it is illustrated by three plates). The general arrangement of the machine is somewhat similar to that of Mr. Usher's. The digging part of the apparatus—consisting of a drum or shaft, round which are arranged in a vertical direction a number of prongs or tines—is placed behind the machine, and receives motion from a horizontal steam-engine, through the medium of drums and belts. The depth to which the tines of the digger operate is regulated by a screw shaft, worked by a handle, as in the machines above noted. On the end of the fly-wheel shaft a pulley (A), or drum is fixed, round which passes a belt, giving motion to a pulley, a little in advance, and below the fly-wheel shaft. This second pulley (B) is fixed on the shaft or axle of two lever arms, at the outer end of which the shaft of the digger is placed. A pulley (C) on the digger shaft receives motion by means of a belt or rigger from the pulley (B). As the depth to which the tines work is lessened or increased, the lever arms fall or rise accordingly, and the relative position of the two pulleys (B and C) are maintained, so that the belt is always tight.

The inventor stated at the recent meeting of the Society of Arts, that he had been experimenting for three years with this machine, at a large expenditure of money; but the experience he obtained was such as to induce him to believe that he had succeeded: he stated also that he had designed a new engine, which would work as high as 100 lbs. to the inch. The following is an extract from the inventor's statement: "It dug like Parkes's forks, and left the ground in a perfect state of tilth after one operation; it threw the earth up into the air, the earth falling first because the heaviest, and the weeds coming upon the surface. They had no difficulty in working about four or five acres a day with that machine. It dug down to the depth of nine inches, and farmers who had seen it working had stated that it did as much in one operation as would require two or three ploughings to perform, besides scarifying, harrowing, &c." The estimated cost of its working was about 9s., whereas 23s. was stated to be the cost under the ordinary mode. The machine is hauled over the ground by horse power, that of the steam-engine being employed to work the diggers only. A complete adjustment therefore between the progressive velocity of the machine over the land, and the rate of working of the diggers, is not attained. It will be noted also that the action of the machine is such as to leave the weeds uppermost—a questionable result. Not the least important office, as some think, performed by the ordinary plough, is the complete inversion of the soil, so as to bury the surface material."

R. S. B.

(*To be continued*)

IS IT PROFITABLE TO APPLY PORTABLE MANURE AS TOP-DRESSINGS TO CEREAL CROPS?

One would think that if anything were likely to be exempt from party warfare it would be questions of agricultural practice. Yet there are no questions in which party spirit rages more fiercely. Look at the drainage controversy between Smith and Parkes; look at the Keythorpe controversy; look at the discussions on liquid manure, and the application of the sewage of our towns to agricultural purposes in the liquid form. It was the misfortune of the sewage question and question of liquid manure to be taken up by two gentlemen who for political reasons were not very popular; and that considerably enhanced the difficulty of dealing with a question which was attended with the disadvantage of being directly opposed to predilections in favour of old-established usages. When Mr. Pusey adopted the water-drill—who had declared liquid manure to be a pretty plaything, but solid manure the only thing for real farming—it became evident that the question of the application of the sewage of towns in the liquid form had made great progress. It became then a question whether it was advisable to solidify the manure contained in sewage water, supposing such solidification to be within the resources of chemistry, in order to reconvert it into the liquid form with water carted two miles. It then became a question in engineering, whether manure in the liquid state cannot be conveyed to the land more economically by means of the steam-engine and pipes.

Liquid manure, however, is not the subject of the present article. It is merely introduced as illustrating the obstacles which retard improvements in agriculture, such as arise from adherence to old habits and the diversity of opinions that prevail on most agricultural questions, together with the difficulty of bringing them to a decision. These reflections were suggested by reading an account of a discussion which lately took place in the farmers' club of Galashiels, on the question—"Is it profitable to apply portable manure as top-dressings to cereal crops?" It was stated by the introducer, Mr. Sanderson, that Britain expends annually £4,000,000 on them. For several years after bones and guano were introduced they were almost exclusively applied to the turnip crop. The success of the practice led some enthusiasts, he said, to top-dress their white crops to such an extent, that it was not uncommon to expend a sum equal to the rental of the land on this practice. With the present high price of artificial manures, and at a time, moreover, when expense is regarded as synonymous with high farming, it was regarded by the author as worth inquiry whether this practice of surface-dressing cereals is really beneficial. Mr. Sanderson first adverted to the evils attendant on this system of top-dressing, pointing out as one of them the tendency which it produces in the crop to lodge. With reference to salt, as counteracting this tendency, he contended that it only produced this effect by shortening the straw. It appeared, therefore, that though it does to a certain extent prevent the tendency to lodge arising from a dressing of ammoniacal manures, this was gained in a great measure by counteracting the very object for which top-dressings were resorted to, namely, the production of a bulky crop. This tendency to lodge, it was added, varied with the soil, and was particularly prevalent on soils resting on the Silurian slates of that district. On clay soils, where they produce strong straw, the tendency to lodge was less, and the evil arising from top-dressing was less also. Mr. Sanderson contended, and we agree with him, that manure ought to be administered to cereals by incorporation with the soil in such a manner that they may be gradually absorbed by the spongioles of the plant.

Then, again, if loss is occasioned by top-dressings producing too great luxuriance in wet seasons, equal loss is sustained from their inefficiency in dry seasons. Some districts, also, are more unsuited to this system than others; such, for instance, as the western side of Scotland, or inland districts skirting mountain ranges. These are the disadvantages, arising from natural causes, which attend the practice of top-dressing for the cereals. On the other hand, there are doubtless situations where the practice may be profitable in any season. These are poor soils, deficient in organic or mineral ingredients, or where the manure is applied to the first crop on newly-reclaimed land. There is no condition of the soil, it was added, in which guano produces such wonderful results as this: 1½ cwt. of Peruvian guano frequently causing an increased produce of 3 bolls of oats to the acre. Such being the direct evils arising from the indiscriminate practice of top-dressing cereals, the author of the paper contended that the indirect evils were greater. The importance attached to top-dressings of artificial manures, which had been vaunted as high farming, had led to the neglect of the best manure of all, that of the farm-yard. The more frequently top-dressings are applied, the less their effect, and the more rapidly is the soil exhausted. Not so, however, with farm-yard manure. Every additional application induces additional fertility; while, apart from its fertilizing effects, it imparts a mechanical action in the soil, by rendering it less adhesive. It is the proper manuring of the turnip crop, and not top-dressings, which imparts the highest and most permanent fertility to the land.

There were, of course, some speakers on the opposite side. The majority, however, appeared to agree with Mr. Sanderson; and the club came to the resolution that, with the exception of poor soils and soils newly reclaimed, it is not profitable to apply portable manures to cereal crops.

In this opinion we fully concur. The high price of guano will lead to beneficial results, as we have on more than one occasion contended, by checking the extravagant use of it, and leading to the utilizing of the large resources of the indigenous supplies of phosphates and ammonia which are now deemed unworthy of attention.

And now, at the close of this article, let us recur to a subject alluded to in the commencement. That subject is the advantage which the farmer would possess from the introduction of such improvements as would put it in his power to give those crops which require it a watering of pure water alone, equivalent to an inch of rain. How often has it occurred to most of us, even in so fine a season as the present, that the weather which promotes the ripening of the wheat is destroying the turnips! How often, again, has it occurred to some of us, in the spring, that if our barley lands alone could get a shower equivalent to an inch of rain, it would be a great blessing! Now, to enable us to obtain this, all we require is a supply of water, a steam-engine, and pipes laid under our land. We will assume the farmer to possess an abundant supply of water. We may almost assume that he possesses the steam-engine. We may assume, at any rate, that he will soon possess it, if we may judge from the array of those implements exhibited at the meetings of the Royal Agricultural Society. Is the third desideratum such a difficulty after all? Give but the word, and there would be a host of companies ready to lay underground iron pipes all over his farm. The question is still to be solved—how far would such a system really pay, either the promoter or his customer?

THE MERINOS AT THE UNIVERSAL EXHIBITION (FRENCH) OF 1856.

(TRANSLATED FROM THE FRENCH OF J. CLAUDE ZOL.)

With propriety we may ask why Spain, the country of the Merinos, was not represented at our recent Exposition? The Arabs and Moors of Spain are said to have collected and handed down numerous documents of antiquity to the revival of letters, and also to have transported and multiplied in Spain the breed of Merinos. The existence of the Merinos amongst the most civilized people of antiquity is attested by many sculptures: the horns, so remarkable, of the statue of Jupiter Ammon were no others than those of a Merino *(Ovis ammonides).* That fine race, destined for the sacrifices of the ancient festivals, and for the manufacture of stuffs, purple was originally from India. It would have disappeared in the midst of the distractions which accompanied the accession of Christianity, but for the intervention of the Moors—the descendants of the Phœnicians, who were not interested in the precepts of the rising church. At present—thanks to the generosity of the kings of Spain—the Merino is spread throughout all Europe. It is, therefore, to be regretted that Spain did not come to gather, at our Great Exposition, the most valuable of premiums—gratitude.

Two sub-races—or rather, two very distinct productions—were there exhibited: the reproductive types of Austria, Hungary, Bohemia, Silesia, Moravia, &c., on the one hand; and on the other, the Merinos of France, divided into two classes—the products of the mountainous districts, and those of the plains. An elegant building had been constructed in honour of the Electoral race of Saxony. Rambouillet and Gevrolles had also their exhibition apart. The sheepfold of Rambouillet belongs to the house of the Emperor; that of Gevrolles is in the jurisdiction of the Minister of Agriculture and Commerce. I have not to speak of the Imperial sheepfold of Montcuvrel, which is chiefly occupied by English breeds and their crosses.

The English have exhibited only a small number of Merinos. The spirit of the cross-Channel breeders is at present turned to the precocious production of butcher's-meat. Thanks to this new doctrine, we now find in England neither beef nor mutton, but only veal and lamb. One breeder confessed that, for himself and friends, he fatted his animals at four years old, in order to be able to eat real beef and mutton, which was not to be obtained at any price from the English butchers. That regimen of convalescence to which a great nation has yielded itself, threatens us also; for the English doctrine has, with us, admirers amongst the zoologists who frequent the office of the Minister of Agriculture. There were, therefore, only two exhibitors of English Merinos, Messrs. Dorrun and Sturgeon, both of the county of Essex, on the English coast.

Amongst the German exhibitors, I have heard a prince and shepherds protest against the designation of "Negretti," given in the catalogue to their Merinos, which many pretend to be originals from the Escurial. The Prince's were of this number. Amongst the Merino-breeders I shall place Prince Esterhazy, who possesses 162,000 sheep; Princes Schwartzenberg, Auersberg, Schaumbourg, Obkawitz, and Kinski. These gentlemen sent the finest animals of their flocks. Counts Larisch, Zichi Ferraris, Breuner Enkovitch, Wilhelm de Homspetsch, Valdstein, H. Daun, Oswald-Thun, Frederic Vallis, Hungadij, Stephankarolis, Miko, &c., &c. All these counts, as well as a legion of barons and great lords whom I shall not undertake to enumerate, had exhibited.

The French breeders, both of the plains and of the mountain districts, raised in their sheepfolds the animals destined for the different exhibitions. They shared equal care and equal allowances of barley and sainfoin. Never leaving the fold, the animals are unaccustomed to the influences both of the mountain and the plain; nor did we observe any difference between these two classes. Messrs. Guénebaut, Godin Achille Maitre, Mouniot, Chaudeen Rousselet, and Gontard represented the mountain—that is to say, the Châtellonais, which is the centre of a country very productive of sheep. The Yonne and the Haute-Marne are dependencies of the circle of which Châtillon is the central point.

Messrs. Simphal, Hutin de la Lage, Hutin de Lessart, Lami, Conseil Lami, Colleau, Dutfoy, belong to the plain.

The centre of their productions is in the department of l'Aine. There is also another circle there, which contains fine flocks.

Messrs. Boilleau d'Illiers, Richer and Noblet have for their chief place Rambouillet. It is to be regretted that Méssrs. Gilbert, à Vitteville, Cugnot à la Douarière, Lefèvre, à Sainte Escabille, who supply the rams for La Côte d'Or, have neglected the Exposition. It is supposed that they did not wish to compromise themselves with the descendants of their rams. All these gentlemen belong to the circle of Rambouillet.

I am far from having enumerated all the breeders of France, any more than those of Germany, who figured at that celebrated Exposition. They were in appearance as two armies, one representing the noble Electoral race—so-much-boasted animals—of delicate form, with short but fine wool, and of middling height; the other of the race called French, of large frame, and with long, thick wool, but rather less fine. The German shepherds, the Schafmeister, the princes, all profess a degree of contempt for this French race, which has not preserved the delicate type of the Merinos of Saxony. The French breeders, laughing in their sleeve, say, "It is far better to have the frame paid for by the butcher, and to have the wool doubly and trebly long and thick, because the wool-stapler does not trouble his head about the fineness. In fact, the wool of France is itself of a fine quality, approaching near to that of the Germans." This comparison is modified by an "almost;" but, in reality, the difference in fineness is scarcely perceptible, whilst the amount of produce is at least double. Besides, the French race is no longer found at Rambouillet; for that place produces short-wools. The French race is in full prosperity in the centres of production which I have already enumerated.

The German Merinos have a particular aspect. The surface of the fleece is blackish, and matted; the interior grease is rose-coloured. I have seen it orange (it must be well understood that I do not speak of the Hampshire). In the sheepfolds of the King of Saxony, they esteem such; whilst an adept of the Côte d'Or prefers white grease, and makes no account of the black, muffled surface.

Amongst the German sheep whose aspect approaches the nearest to the Merinos of France, I shall cite those of Prince Schwartzenberg; and amongst the French sheep, the lot No. 1,812, of M. Hutin, had, above all others, the ruffled and blackish surface of the German Merinos. That lot was admirable.

I have spoken of two armies; but their combats were pacific. In the meanwhile, the Schafmeisters had displayed too much dignity in not admiring the French boxes before which they passed gravely. On the other hand, some words of a shepherd of the plain districts will describe the small account which our countrymen made of the Saxony Electoral race. "If I saw," said he to me, "such a ram in my flock, I would hunt him like a wolf, for fear he should cover one of my ewes." And yet that ram was one of the occupants of the chief pen.

Rivalry was manifested under various forms. The French breeder estimated his ram at 6,000 francs; the German breeder raised his price to 15,000 francs. There was nothing but vanity in both. In reality, the price of a good ram ought not to reach that of a fine bull. A fine ram is worth from 100 to 300 francs. All beyond that is pure fancy. I have seen two Durham bulls, equal in beauty, for one of which 20,000 francs was refused, whilst the other was sold for 1,200 francs. This latter was the true value. Because a millionaire has the fancy of having, at whatever price, a ram for which he pays 6,000 francs, is it to be said that similar ones are worth 6,000 francs? Such, however, is the error—very excusable, it is true—of certain breeders interested in the question. A very praiseworthy practice, of which these gentlemen reserve to themselves the secret, consists in not giving more than thirty ewes to a ram, and of not using the ram more than two years. Upon this excellent principle, the produce of a ram will be sixty lambs. Now the hire of a ram of 15,000 francs is worth 250 francs; whilst that of a handsome bull, of the best French race, is only 75 cents. The folly of prices is displayed by this single comparison.

In short, this Exposition will be as profitable to Germany as to France. Messrs. the Princes would wish to share the advantages of the French race. Our breeders will make a point of not swerving from primitive types, the bearers of fine fleeces. Each will have gained by it. Perhaps the Government itself would, in the midst of the vast ovine production of France, preserve some of the more pure of the Merino race of the Escurials, in order to check the errors of opinion, and lead in the path of perfection that important branch of the national agriculture.

MANCHESTER AND LIVERPOOL AGRICULTURAL SOCIETY.

MEETING AT WARRINGTON.

This meeting, which took place on Thursday, Sept. 10, was quite up to the average of former occasions. It was well supported by the district generally, although, as Colonel Patten, the president, said at the dinner, in consequence of not strictly conforming with the rules of the society, many farmers were excluded from competition in those classes for which they had entered. This dinner was chiefly remarkable for the presence of Mons. A. Mille and Mons. E. C. E. Mole, two gentlemen who were commissioned by the Emperor of the French to report upon the agriculture and different breeds of stock of this kingdom. Mons. Mole made a clever little speech in French, in which he styled England as "Professor of Agriculture to the World."

HORNED CATTLE.

JUDGES.—Mr. Heaton Clark, Ellinthorpe Lodge, near Boro'-bridge.
Mr. W. Torr, Aylesby Manor, near Grimsby.

For the best bull of any short-horned breed, above two and under four years old, £10, James Dickinson, Upholland, near Wigan.

Second prize, £5, James Parr, Hatton Hall, near Warrington.

For the best bull of any short-horned breed, first prize, £8, Thomas Atherton, Chapel House, Garston, near Liverpool.

Second, £4, Thomas Waller, of Mellor, Stockport.

To the tenant farmer for the best bull of any breed above two and under three years old, first prize, £10, S. Clough, Ashton, near Warrington.

Second, £5, James Dickinson.

To the tenant farmer for the best bull of any breed above one and under two years, first prize, £8, Hugh Higson, Pendleton, Manchester.

Second, £4, T. Wild, Weaverham, Northwich.

To the landlord who shall keep the best bull of any breed to serve the cows of his tenantry, the Society's Silver Medal, Earl of Crawfurd and Balcarres, Haigh Hall, Wigan.

For the best cow or heifer of any breed in milk or in calf, first prize, £5, J. Parr.

Second, £2 10s., Thomas Atherton.

For the best two-year-old heifer of any breed, first prize, £5, Thomas Johnson, Halton Grange, Runcorn.

For the best yearling heifer of any breed, first prize, £3, Thomas Atherton.

Second, £1 10s., Thomas Johnson.

To the tenant farmer for the best cow for dairy purposes, in milk or in calf, first prize, £5, James Gorton, Manchester.

Second, £2 10s., S. Clough.

To the tenant farmer for the best pair of two-year-old heifers of any breed, first prize, £5, James Dickinson.

Second, £2 10s., Thomas Atherton.

To the tenant farmer for the best pair of one-year-old heifers of any breed, first prize, £5, S. Clough.

Second, £2 10s., T. Forrest, Tarporley.

To the farmer, not being a cattle dealer, showing the best lot of milch cows, first prize, £5, James Parr.

Second, J. Gorton.

To the farmer, not being a dealer, showing the best lot of calves of his own rearing, first prize, £3, T. Atherton.

SHEEP.

JUDGES.—J. C. Etches, Harley Thorne, near Stone.
W. Fair, Aston, near Northwich.

For best Leicester ram, first prize, £3, J. S. Wilson, Norton Hill.

For best South Down ram, first prize, £3, L. F. Lloyd, Bannerch, near Mold.

For best pen of five Leicester ewes, first prize, £3, J. S. Wilson.

For best Leicester ram, first prize, £3, J. S. Wilson.

For best shearling ram, first prize, £2, J. S. Wilson.

For best pen of five shearling ewes, first prize, £3, L. F. Lloyd.

For pen of five short-woolled breeding ewes, first prize, £3, ditto.

For best short-woolled ram, £3, ditto.

For best shearling short-woolled ram, first prize, £2, P. Wright, Middlewich.

For best pen of five Leicester rams, first prize, £2 10s., J. S. Wilson.

PIGS.

The show of pigs was better than usual, and all were of a fine breed.

HORSES.

JUDGES: Messrs. Cox, Blackfriars-road, London.
J. Brogden, Old Trafford, Manchester.
J. Ellis, Liverpool.

For the stallion best adapted for agricultural purposes, first prize, £6, T. Horeshaw, Chorley.

Second, £3, Jas. Dale, Liverpool.

For the best ditto for draft purposes, first prize, £6, Thos. Foreshaw, Chorley.

For ditto for road purposes, first prize, £6, John Brogden, Sale, Manchester.

Second, £3, T. Smith, Northwich.

To landlord keeping best ditto for serving tenants' mares, the society's silver medal, Earl of Sefton.

For best agricultural brood mare, first prize, £5, Mr. Newton, Altringham,

Second, £2 10s., J. Hesketh, Manchester.

For three-year-old geldings or fillies, first prize, £5, S. Brookes, banker, Manchester.

Second, £2 10s., J. J. Blackburne, Warrington.

For best two-year-old gelding or filly, first prize, £4, Mrs. Tyrer, Aintree, Liverpool.

Second, £2, J. Hesketh, Manchester.

For best one-year-old gelding or filly, first prize, £3, W. Palin, Chester.

Second, £1 10s., J. Hesketh, Manchester.

For best three-year-old half-bred gelding or filly, first prize, £5, Thomas Smith, Northwich.

Second, £2 10s., Robert Bell, Rainford, St. Helen's.

For best mare or gelding, in actual use as a roadster, first prize, £5, H. Barton, Manchester.

Second, £2 10s., G. M'Cullock, Pembroke, Wigan.

For best pair draught horses, belonging to one person, first prize, £5, and second, £2 10s., R. Lupton, Liverpool.

To tenant farmer, for the best pair of horses, first prize, £5, J. Birch Orrell, Liverpool.

Second, £2 10s., J. Cartwright, Liverpool.

HORSES.—EXTRA.

The following were awarded the society's medals:

W. Worthington, Manchester; G. Fell, Warrington; J. H. Low, Manchester; and the Earl of Derby, Knowsley (two medals).

CHEESE.

JUDGES.—Mr. H. Warburton, Manchester.
Mr. Roger Bate, Tarporley.

PRIZES OFFERED BY THE MAYOR OF WARRINGTON,
JOSEPH CHRIMES, ESQ.

CLASS 1.

For three best cheeses, not less than 50lb., first prize, £6, S. Lees, Newton-by-Daresbury.

Second, £3, H. B. Briscoe, Littleton, near Chester.

CLASS 2.

First prize, £3, E. A. Wood, Oakhouse, Over.

Second, £2 10s., J. Bowker, Yew Tree, Aston-by-Budworth.

SALE OF MR. SEXTON'S SOUTHDOWNS.—This celebrated flock was sold on Wednesday, August 26, by Mr. Strafford, at the Stoke Park Farm, near Ipswich. There was a good attendance of breeders, as might have been expected. Mr. Sexton has now for upwards of twenty years bred with great care and judgment, having during that period used some of the best stock he could procure from the Babraham, Hengrave, and other famed flocks. The day was remarkably fine, and the beautiful and elevated situation of Stoke Park, looking over the Orwell, gave an additional attraction to the sale. Luncheon was served in a spacious tent, holding about 200 gentlemen, over whom Mr. Lugar presided. Due justice having been done to the bountiful spread and good cheer, and the usual loyal toasts given, the sale commenced with the shearling ewes—Lot 1 selling to Mr. Bates for 10 guineas each, who also bought another lot at £10, others selling at 125s., 115s., 110s., 105s., and 90s. each. The principal purchasers in this class were, besides Mr. Bates, Sir R. G. Throckmorton, Mr. Boby, Mr. Carpenter, Mr. Clarke, Mr. Hawkins, Mr. Colvin, Mr. Tallant, Mr. Markham, Mr. Biddle, and Mr. Cass. Two-shear ewes: The highest-priced pen of ewes was bought by Mr. Crisp at £7 each; Mr. Bates also bought a pen, at 125s. each; others selling three pens at 85s. each, and less figures. Mr Tallant bought largely in this class, as well as Messrs. Clarke, Clarkson, Hare, Harwood, and Walton. Full-mouthed ewes: The highest-priced pen was bought by Mr. Hempson, at 145s. each; other pens selling at 140s., 105s., 85s., 80s., and 70s. each. Ewelambs were sold at 55s., 52s. 6d., 50s., 47s., and 45s. each. Shearling rams: Lot 11 was sold to Mr. Hawkins for 22 guineas each; others selling at 16½, 16, 15½, 15, 14, 13, 12, and 10 gs. each. Older rams: Mr. Bates bought a two-shear at 28 gs.; Mr. Oxley Parker bought one at 15 gs. Ram lambs: Sir R. G. Throckmorton bought two lots at 12 gs. each; Mr. Moore one for 10 gs.; others selling at 9, 8, and 7 gs. each. After the above were sold, a few choice boar and sow pigs of the West Suffolk improved breed, belonging to Mr. G. M. Sexton; one sow at six months sold for 11½ gs., another five months old 10 gs., and others at good prices. A boar five months old fetched 8½ gs. The total amount of the sale was about £2,700.

MANURE HEAPS.

Farm-yard dung is composed of the straws of grain crops which are used for littering the animals of the farm, and mixed with solid and urinary excrements that are voided by the horses, cattle, and swine, that are reared and fattened. The urine contains elements that are quick of action, and of stimulant powers: the solid fæces are earthy in their composition, being the debris of the food consumed; while the straws in the litter yield by decomposition in the soil an earthy residuum which adds to the staple of the land. Hence the great value of the compound article as a manure in quick matters over more durable substances, and in the gradual decomposition of earthy straws for future use.

Urine contains many component parts—about 915 of water in 1,000 parts, 20 of urea, 18 of lactic acid, lactate of potash, and ammonia, 20 of hippurate of potash, 2 of sulphate of potash and soda, 4 of carbonate of magnesia, some chloride of sodium and carbonate of lime. Solid excrements in 100 parts contain 63 of silica and sand, 10 of phosphate of lime and magnesia, 10 of potash, 5 of magnesia, 1 of lime, with traces of other matters. The action as a manure depends on the mineral ingredients. Urea, the principal organic ingredient, is the most nitrogenous body found in the animal organism. During putrefaction it is converted into carbonate of ammonia, which being a highly volatile body, escapes by exposure to the air. Gypsum prevents this loss, by forming sulphate of ammonia, which is not volatile at ordinary temperatures. Nutrition being accompanied with combustion from decomposition of food, the solid excrements represent the incombustible ashes, and the unconsumed organic matters of the food mixed with them. The more soluble organic and inorganic ingredients or products of change are found in the urine, while the insoluble substances appear in the fæces. The alkaline salts characterise the urine, the earthy salts the fæces. Both excrements differ much according to the kind of food, and the condition of the body that consumes it. Urine contains the soluble mineral substances, in addition to the nitrogenous or ammonia-forming ingredients in urea, uric and hippuric acids. The straws of the cereal crops contain about 60 per cent. of silico-earthy phosphates and carbonates, with soluble salts. The haulm of peas and vetches contains more of soluble salts and of carbonates, and a greater appearance of metallic oxides. The earthy matters enter into combination with the animal and more easily soluble ingredients, retard the too rapid putrefaction, and confer the lasting quality on farm-yard dung as a manure.

In order that farm-yard dung may be formed into a manure of the best and a superior quality, the yards in which the straws and excrements are placed must be made into shapes that allow the proper mixture of the different matters that are assembled. The moisture must spread equally over every part of the yard, which is best done by the bottom forming a concavity in the centre, or what is called dish or bason-shaped, when the moisture being gathered into the middle, will rise in a level over the mass that overlies it, and is uniformly diffused, till the superabundance escapes by the gateway into a covered drain, leading to a tank. But the most proper management absorbs the liquid with straws, which is the most beneficial application of liquid manure, after all that has been spoken and written on the subject. The surface of the yards must be kept level, regularly and thinly covered with litter, the straw racks often shifted, and every care used to procure an equal mixture of the straws and excrements. It is advantageous that store pigs have liberty to frequent the yards, as in searching for grains and remnants of turnips the animals move and turn over the heap, and promote a beneficial mixture. It is essential that no dry matters remain in that condition, but are impregnated with moisture, and mixed with excrements.

The yard, which receives from the stable the strawy litter and dry warm dung of the horses, should be converted into a nursery for young swine, where the animals are fed during winter with turnips and potatoes, and in summer with clovers and vetches. The warm and dry dung of the horses is to be evenly and thinly spread over the surface of the yard on each morning as the excrements are carried from the stable: the pigs move it about in search of grains, and deposit their saponaceous excrement, which prevents the heating or "fire-fanging" of the stable dung: the eating of roots and esculents leaves a filth which benefits the mixture, and is further improved by a portion of young cattle living in the yard. The mixture is threefold, of the horse, cattle, and swine, and the mass becomes a most valuable compost. The pig is fond of warmth, and finds a most congenial bed among the warm dung of the stable, which the animal uses for its own benefit, and converts into a valuable article. It is essential to the quality of farm-yard dung that the preparation be managed in the proper and necessary mixture in the yards—of dry and moist substances, solid and urinary fæces, and of the excrements of different animals: of horses with dung of swine, and of cattle with all. The future application becomes doubly promoted in the benefit by this arrangement.

The winter provision for fattening and store animals is generally arranged by the end of October, and the yards will be filled with dung in January, during which month the contents are carried to heaps in the fields that are intended to be planted with green crops. On the headland of the field near to the gateway, a site is marked in a long square form, about six yards in width, or more, as the size of the field may require a quantity of dung. The bottom is strewed with strawy dung, in order to bear the cartage, and prevent the more decomposed materials from sinking into the ground. The loaded carts are backed to the extreme end of the site, on which the contents are pulled, and formed loosely into a bank of about four feet in width, that is raised to about six feet, and made level on the top. Banks in succession are raised in this way, the whole width of the site, sloping at the sides, and level on the top. The contents are pulled from the carts upon the bank, and spread most carefully over the surface, thinly and evenly, dry and moist substances being mixed, where any necessity appears. The loaded carts are backed close to the banks, which facilitates the emptying of the contents in the proper places. A confidential person, with assistance, is placed on the banks, and entrusted with the construction and management of the manure heap. The sides are neatly sloped, and the top made level, the wettest materials being placed outside; and if much dried afterwards, the outside and top of the heap are cut and dug over, in order to procure a uniformity of quality. A light covering of earth is thrown over the top of the heap, and may be built up the sides, to prevent the drying by the sun and winds.

When any manures are purchased from towns and villages, as from butchers' stalls, pig-sties, cow-sheds, and similar matters to farm-yard dung, the substances are strewed in mixture evenly and thinly along the banks of the manure-heap as raised in succession. Minute earthy matters are not allowed, as the spreading in the drills is inconvenient by the tools used for farm-yard dung; but all strawy and large fibrous substances are best used in mixture with farm-yard dung in the heaps as formed during winter. The quality of the heap is greatly improved.

The yards being empty of the contents in January, will be again filled in the end of March, when the dung is carried to the heaps in the field, and treated as has been described, by being added to the made heaps of January, or made into new formations where required. After March, farm-yard dung is not advantageously prepared, or at furthest into the middle of April: after that time the contents of the yards lie over summer for autumn use.

It is very advantageous that heaps of farm-yard dung are constructed during wet weather which admits the possibility of working under it, and also during snowy weather, and all for the inestimable privilege of a large moisture being supplied to the heap of mixed substances. Experience has shown the benefit of laying upon the heap a large covering of snow, which dissolves, and sinks gradually into the heap beneath, with a store of ammonia and moisture: rain-water and snow-water convey this beneficial element. A cool sheltered situation is advantageous to a heap of farm-yard dung.

In the state of loose aggregation and light treading of heaps, as has been described, farm-yard dung commences a fermentation that is more or less rapid and violent as the circumstances of weather and ingredients of composition will encourage and permit. The free admission and contact of air, and a certain degree of heat from the changes of weather, will advance the fermenting process which arises from the action of the different substances on each other, by which intestine commotions a spontaneous reaction of the constituent elements goes on, and a series of changes of compositions terminate in the formation of new products, essentially different from the original substances. The elastic fluids evolved from vegetables are combinations of the elements of the plants, and have for their bases carbon and hydrogen. Animal matters evolve, during putrefaction, much ammonia, and products peculiar to themselves, particularly combinations of sulphur and phosphorus, and hence the fœtid odours and noxious properties of the gases extricated from them. During the decomposition of mixed animal and vegetable substances, heat is generated and disengaged by the absorption of oxygen or vital air, and water is decomposed. As putrefaction advances, ammonia or volatile alkali is formed, and in its tendency to escape from the heap it unites with such of the vegetable matters of the dung as have advanced to the oxygenated state, and forms a saline saponaceous substance, so very conducive to the growth of plants. Fermentation goes on in moisture and heat at 55 to 60 deg.: oxygen is absorbed and carbonic acid formed, heat is produced, and elastic fluids, chiefly carbonic acid, gaseous oxide of carbon, and hydro-carbonate are evolved: a dark-coloured liquid of a sour and bitter taste will be formed, and leaves ultimately earthy and saline matter, coloured black by charcoal: the fluid always contains acetic acid, and when albumen or gluten exists in the vegetables, it contains volatile alkali. The elastic fluids are carbonic acid principally; the condensable are the acetate and carbonate of ammonia. Fermentation is divided into three stages—the vinous, or sweet; the acetous, or acid; and the putrefactive, or the rotten. The first two are confined to saccharine plants: the last comprehends a wider range, and includes almost every animal and vegetable. The three stages are not always necessary: the acetous takes place without the vinous, and the putrefactive without either. Farm-yard dung undergoes the last two processes.

In most cases of lightly-trodden heaps of farm-yard dung that has been prepared in the yards and placed in masses, as has been described, the first stage of decomposition has been passed, and the heap has advanced into the state of putrefaction (and which exists not beyond the middle process) by the time when the dung is applied to the land in the end of May and during the month of June. The mass will appear in a soapy consistence, damp, and soft, and not wholly devoid of heat, but retaining that element in some considerable degree. The later formations of heaps in March and April will not be so far advanced in the fermentation, retain more warmth, and exhalations will arise from the movement of the dung. The first process has not ceased, and the putrefaction has not extinguished the internal commotions. In order to retain the elastic fluids that escape during fermentation, a covering of earth is laid over the heap of dung, and a covering of gypsum over the earth, as this last substance has a peculiar aptitude to fix ammonia as it arises from animal matters. It may be a difficult affair to arrest and fix volatile substances: the best known way is here pointed out, which must serve till a better is found.

During the winter season of making dung, from the beginning of October to the middle of April, the contents of the yards are carried at any time of convenience to heaps in the fields, placed as before on sites of extent to suit the quantity of dung that may be required. The heap is formed with sloping ends, over which the loaded carts pass and deposit their contents, which are regularly spread over the surface by a person appointed to superintend the erection of the heaps. During frosts and snows the heap is favourably constructed; in damp weather it will be necessary to lay frequent coverings of dry straw over the heap, which will be moistened and rotted by the prepared substances from the yards. The heap is trampled into firmness—that excludes air and prevents fermentation, which is deferred to a later period of time. The last addition to the heap is done in the middle of April, when the substances must be properly moistened, as the dry season of sun and wind does not afford the same ingredients of decomposition as are found in the winter months. The last covering of the heap must be in moist substances thoroughly impregnated to saturation.

Potatoes, beet root, and turnips are the green crop plants of Britain, and are cultivated in the order in which they are now named. Ten or fourteen days before the dung is required, the manure heap is turned over with forks, when the mass of dung is moved in single lumps, placed in a new position, and laid loosely together, the outside of the heap thrown into the inside, dry and wet substances shaken into a mixture, and a square heap formed in a shape of neatness and compact appearance. A very active fermentation will immediately ensue from the free admission of air and moisture; and the movement of the heap will provoke the changes and combinations that arise from different bodies in contact. The process will have reached the height by the time the dung is carried to the drills, and may be on the wane; and then the volatile matters may enter more freely into the soil for future benefit. In this mode, damp exhalations will arise from the dung in the drills, and exert a very beneficial effect on the germination of plants. It is necessary that every possible dispatch be used in depositing and spreading the dung in the drills, reversing the ridglets over the dung, and in sowing the turnip seeds among the fresh combinations that are provoked by the movements and position of the dung and the soil. The combined arrangement of economical dispatch in turnip husbandry has been long well known and most fully practised.

An equal success has attended the two modes now described of preparing heaps of farm-yard dung as a manure for green crops; and it may not be easy to decide the superior benefits, if any, from dung in which the changes are going on, or in that where they are completed. In the heaps of light treading, the changes may be understood to be very far advanced, if not wholly completed; in many or in most cases the putrefaction is quietly introduced by reason of no more caloric being evolved to create combinations. The mass sinks into a quiescent condition, moist and warm, and the materials are easily managed in the application to the drills. The trampled condition of manure heaps that are turned over a short time before application indicates the mass at the time of use to be in the first stage of fermentation, vinous or acetous, and the process to be in full vigour when the dung is placed in the drills, with every action in force. Our own opinion prefers the last preparation of farm-yard dung, in heaps trod over during winter in the process of formation, and turned with forks just before being used, after a most extensive and varied experience in turnip farming of thirty-five years, of which one-third were spent in the celebrated counties of Roxburgh and Northumberland, partly in the midland and southern counties of England, in the west of Scotland, and in South Wales. These localities comprehend much variation of soil and climate, that is very necessary to establish a settled fact. It must be acknowledged that in the case of the greatest success achieved with freshly-fermented dung, the soil and season were very favourable for Swedish turnips; so that the single instance cannot be adduced as confirming any superiority beyond the common observation. A greater bulk is obtained by the fresh preparation, as the materials are not reduced as by the light treading and a larger fermentation; and this larger bulk will form a recommendation, and more especially when the efficacy proves to be equal, if not superior.

Any difference of expense may not be worth a figure between the two modes of preparation; and the difference may be none in any respect, if all the dung of the yards could be placed in heaps of light treading in March or April, so that the fermentation has not ceased when the dung is applied to use. But this inconvenience is beyond admission in any case of extensive farming. In heaps made at that time, the fermentation would not be extinguished at the time of using the dung, and a near similarity would exist between the two modes of preparation.

Observation and experience constitute the most certain grounds of progress in every practical art; and the adoption arising from a majority of similar results forms the experience of it; which, being systematized, constitutes its theory. Agriculture is the science of circumstances and modifications, almost beyond any other human performance; the difference of soils and the variations of climate render necessary a very wide allowance for different effects under different circumstances, and make it impossible in many cases to lay down a rule for certain application. But there are always found some rules which never fail under any circumstances, and which produce a certain effect without any, or with very small, modifications. Of this number are the two modes now detailed of preparing farm-yard dung, of which the materials are efficacious in any soil and climate in Britain. The value admits no curtailment.

It frequently happens, in extensive turnip farming, that dung is wanted to finish a field in the manuring, and that the deficiency is supplied from the farm-yards in the best materials that can be got. Three instances occurred during my own practice, when freshly-voided fæces were carried from the door of the cowshed, and laid in the drills in the same quantity with the fermented manure of the dung heaps. The treatment was the same in every respect; and in every case the turnips showed a very marked superiority from the first braird to the storing of the bulbs. The germination was more early and vigorous; the summer growth was very distinct in dark-green and widely-spread leaves; and the full-grown bulbs were larger and more numerous than on the rest of the field; altogether forming a superior crop in every point of eminence. The similar results in three cases of varied soils and climates may infer, or rather establish the conclusion, that freshly-voided fæces are superior, or at least equal in effect, to the fermented heaps of farm-yard dung, and the preparation is unnecessary in heaps or piles. The superiority may arise from the animal caloric in the freshly voided fæces exerting an immediate influence, and being more potent in effect than the heat of fermentation. The difficulty of covering in the land the rank straws of litter with the fresh excrements will form an objection to this mode of using farm-yard dung; but all straws for litter may be cut into short lengths by the steam power of the thrashing machinery, and be easily covered in the drills. The dung in the condition of fresh excrements and short straws may be spread in broadcast on turnip lands, and covered by one furrow of ploughing, and then mixed with the land by longitudinal and cross operations of Finlayson's harrow. The land is drilled with one furrow of the common plough, and the seed sown as usual, with or without a portion of some auxiliary manure. This latter application yet requires practical proofs for support. The superiority of freshly-voided fæces over fermented dung is established by the above-mentioned majority of results. It will lead to a total abandonment of fermentation heaps and piles of farm-yard dung; the labour and expense will be saved, and a greater bulk of manure will be obtained, that is of more efficacy, and produced at less cost. These advantages constitute the value of any article in a majority of superior points.

IMPORTANT TO FARMERS—LANDLORD AND TENANT.

The case of Dr. Milne's trustees against George Gordon one of their tenants on the estate of Muchalls, has at last com, to a close by a final verdict of Sheriff Davidson, of Aberdeen, in favour of the defender, with expenses. Its process originated in a charge of miscropping, upon which the pursuers founded their case. The defender had adopted the four-shift course on two of his fields, with the view, as appeared from the proof, to bring those two fields into a *system* along with the other parts of the farm, which had yet eight or nine years to run, so as to have it in his power to leave the whole farm in one uniform rotation at the termination of the tack. To do this he was forced to take a cross crop of one field, and to farm another on the fourth shift. Without the slightest objection, Mr. Gordon (who now resides in Aberdeenshire), was served with a summons of damages, for miscropping, before the Sheriff of the county of Aberdeen. Mr. Gordon, who has a regular stamped lease from the late Mr. Silver, of Netherley, is tied to no specific rotation, but is bound to comply merely with the rules of good husbandry established "in this part of the country." Sheriff Watson dismissed the action as incompetent while the lease was current, and that it would be palpable injustice to subject an enterprising tenant in damages while it may be found that he had improved the farm, and found the pursuers liable in expenses of process. The pursuers appealed to the principal, Sheriff Davidson. His Lordship recalled his substitute's interlocutor, and allowed the pursuers a proof of actual damage, and the defender a conjunct probation. A great many witnesses on both sides were examined both before the Sheriff of Aberdeen and before the Sheriff-substitute of Kincardineshire at Stonehaven, as commissioner. About forty witnesses in all were examined; the principal of whom, for the pursuers, were: Messrs. Robt. Walker, of Portlethen; Arthur Glenny, of Fairneyflatt; James Keith, auctioneer; John Keith, farmer, Logie; George Gordon, Aquhorthies; Robert Williamson, of Bendaugh; James Forbes Beattie, land surveyor in Aberdeen, and others. On the part of the defender: Messrs. Cowie, of Haulkerton; Miln, of Kirkland; Chisholm, of Arduthie; Bisset, of Newton; Roberts, of Lumgair; Thom, Clochnahill, and as many more as nearly darkened the Court-room of Stonehaven for three days. On advising the proof, the principal Sheriff dismissed the process, found no damage incurred, and subjected the pursuers in expenses. The case was originally for £70 of damages, one half of the amount of rent. This litigation will involve an expense of little short of £200. The principal witnesses who were called on the part of the pursuer spoke distinctly, one and all of them, to the damage, and the exact amount of damage sustained by the landlord, through the defender's alleged miscropping. On cross-examination they were called upon by the defender's agents to state the grounds upon which they made their computation, and the grounds on which they formed their opinion. They all declared that as the tenant had been cropping in a way not approved by them, the only way of estimating the amount of damage per acre was the quality of the crop. They all said there was not a better crop in Kincardineshire, and that therefore, as he by miscropping had taken an extra benefit, it must be returned to the landlord. Sheriff Watson, the substitute, in his interlocutor, said, "This would be palpably unjust;" and the principal Sheriff in his note adds, in regard to the witnesses *data* of calculation, "This is strange doctrine."

MEETING OF THE BREEDERS OF DOWN COTSWOLD SHEEP.

In pursuance of a resolution agreed to, at a preliminary meeting of the breeders of Down Cotswold sheep, held at the Roebuck Hotel, on the August monthly cattle market day, a public meeting of the breeders of that class of sheep was held on Wednesday, Sept. 9, in the Roebuck Hotel, for the purpose of taking into consideration the propriety of agreeing on some more definite name for that breed of sheep. The meeting took place at four o'clock, when among the breeders present were G. H. Barnett, Esq., of Glympton Park; John Rowland, Esq., of Islip; Mr. J. Hitchman, of Little Milton; Mr. W. Gillett, of Brize-Norton; Mr. Middleton, of Cutteslowe; Mr. J. Greaves, of Elsfield; Mr. T. E. Miller, of Southfield Farm; Mr. E. Hurst, of Cowley; Mr. J. Price, of Glympton; Mr. Lord, of Stanton Harcourt; Mr. Parrott, &c.

Mr. Barnett was voted to the chair.

The CHAIRMAN said he regarded it as a great compliment to be selected to have the honour of presiding over a meeting to take into consideration a subject which was of great importance to the farmers of this county. He should have hesitated in taking the chair if he had been required to make any remarks upon the question before the meeting, for he was only a raw recruit in sheep-breeding, compared to the veterans around him; but he had come more out of curiosity to hear the sentiments of gentlemen who were better qualified than himself to speak of that breed of sheep peculiar to this county, and which had now achieved no small degree of reputation. He confessed that he had for a long time felt a great interest in the subject, and had thought that this breed of sheep had proved so useful to them that the time would come when they would be better known and more appreciated. He had mentioned the subject to some friends of his, who were members of the Royal Agricultural Society, with a view of showing that the breeders of this class of sheep were not fairly treated in being precluded from competing for some of their prizes. The name at present, "half-bred," and "cross-bred," led people to think but little of them, but he thought that by a little exertion and patience they might get the breed more universally recognized at their great public meetings; but that, however, must be left to the decision of the Royal Agricultural Society. If they produced the quantity of the long wool, with the quality of the short wool, it would entitle them to be classed along with the short-woolled sheep. He was anxious to hear the opinion of those who were more competent to speak on this subject, and he expected to have seen the Messrs. Druce at this meeting, because they were large breeders of that class of sheep, and he hoped before they departed they would agree to some resolution which would be satisfactory to all who were interested in the breed of sheep for which this county had become so distinguished.

Mr. H. MIDDLETON, of Cutteslowe, admitted that he was the writer of the letter which appeared in the two Oxford newspapers a few weeks ago, suggesting the propriety of giving a more definite name to the class of sheep now known as "Down Cotswolds." He was induced to write that letter because at the recent Royal Agricultural meeting at Salisbury they were entered in the catalogue not as Down Cotswolds, but as Downs and Cotswolds, and were thought but little of. It appeared to him that a breed of sheep of 20 years' standing ought to have a definite name, like the Shropshire, Hampshire, and other Downs. The very Downs were now cultivated and covered with corn, and the Down sheep were improved as well as the pastures, and he considered the name of "Oxfordshire Downs" would best denote the breed peculiar to this county. At the recent exhibition in France, in the present year, the Down Cotswolds were classed with the Cotswolds, instead of with the short-woolled sheep, but the Down Cotswolds were patronised by the gentlemen abroad as much as they were at home. He contended that they ought to have a distinctive name for their breed of sheep, and cited the authority of the late Earl Spencer, who laid down the rule that if they continued a breed for four or five generations it was so fixed that nothing could move it if they stuck to it.

Mr. J. HITCHMAN, of Little Milton, said that now that the matter was taken up with regard to this breed of sheep, which had attained considerable reputation in this and other counties, he thought they ought to make a stand, especially as the breed originated here. They certainly had brought it into competition more than any other county, and he had been a breeder of this class of sheep upwards of twenty years, and exhibited them at the Smithfield Show the second year when prizes were given to that class of sheep. He had taken five first prizes in succession, and had obtained nine medals and several second prizes for them; but after a few years he met greater competition—and no man could expect to keep at the head of the poll for ever, but must give way to his brother breeders. They ought not to be dissatisfied because some stepped before them, for it did good; and he had heard the Duke of Richmond, who was unsuccessful on one occasion, say that it did them good to be beaten, and warned his competitors that he should step on their heels—which he shortly afterwards did, and beat them. This breed of sheep had certainly made a stand in Oxfordshire; and not only here, but was spreading over the country, and had now become an extensive breed, and he was not sure whether it would not soon exceed all other classes in point of numbers. They were not met on that occasion to condemn this or that breed of sheep, and he was not a bigoted man, but desired to see kept up all breeds which were best adapted for their respective localities. He thought they were now in a position to claim for their peculiar breed of sheep a more definite name, and he could not see why they should not have Oxfordshire Downs as well as Shropshire and Hampshire Downs, especially as the breed was of upwards of 20 years' standing, and no other class of sheep suited this locality so well, and if they went into other counties he did not see why their sheep should not retain the name of Oxfordshire Downs.

Mr. MIDDLETON explained, in allusion to a remark from the Chairman, that Mr. Druce, sen., was at a watering place, but that Mr. Joseph Druce and Mr. Samuel Druce, who were unable to attend the meeting, were with him yesterday, and cordially concurred in the proposal to give a more definite name to the breed of sheep now known as Down Cotswolds.

Mr. JOHN ROWLAND said he concurred in what had fallen from the previous speakers, and considered that this breed of sheep was entitled to a distinctive name, which would enable it to compete in any county as a distinct breed of sheep. The breed had been kept up for twenty years, which was surely long enough to establish any breed, and he thought that if they went back they might even go to a further extent. With

regard to Down Cotswolds, no doubt the first cross was one of the most useful breed of sheep they had, to certain flock masters; but there were many gentlemen who did not keep a breeding flock, but bought stock and fed out. In his opinion the most useful cross was the Long-woolled with the Down; for with respect to money value, they got greater weight and nearly as much wool, though as regards quality they could not go quite so far. They had seen some fine specimens of long-woolled sheep and of the Downs, but when they spoke of Oxfordshire Downs they meant a distinct breed—a cross breed—a continuation from the Cotswold and the Downs.

Mr. W. GILLETT, of Brize-Norton, said he had not been in business long, but he had heard his father say that for twenty years he had been a breeder of this class of sheep, and never used any other. Mr. Hitchman, the father and founder of this breed of sheep, had stated that twenty years was long enough to establish a claim to a distinctive name, and he cordially concurred with him.

Mr. JOHN GREAVES, of Elsfield, said he agreed with al that had fallen from the previous speakers, and remarked that he had been a breeder of this class of sheep for seventeen years, and the flock which he took to, belonging to Mr. Martin Tagg, was of ten years' standing, and up to the present time had never been crossed.

Mr. J. HITCHMAN then moved, and Mr. J. ROWLAND seconded, the following resolution, which was carried unanimously:

" That this meeting is of opinion that it is expedient to give to the breed of sheep now known as 'Down Cotswolds,' and which has been established in this county for upwards of twenty years, the more distinctive and proper name of 'Oxfordshire Downs.'"

The CHAIRMAN suggested that Mr. Druce, sen., who took an active part in the proceedings of the Royal Agricultural Society, should be requested to call the attention of that body to the resolution which had been agreed to unanimously by the principal breeders of the class of sheep in question.

It was then agreed that the resolution should be advertised in the *Oxford Journal*, the *Oxford Chronicle*, and the *Mark-Lane Express;* after which, on the motion of Mr. J. ROWLAND, seconded by Mr. J. GREAVES, a vote of thanks was accorded to the Chairman for his kindness in taking the chair, and for the ability which he had displayed in presiding over the meeting.

The CHAIRMAN briefly returned thanks, and stated that he should always be happy to place his services at the command of his brother-agriculturists. The Chairman then left, and Mr. Hitchman having been voted in his place, the interesting ceremony of christening the newly-designated breed was proceeded with, and success to the " Oxfordshire Downs " was drunk in bumpers of champagne.

Other toasts followed, including " The father and godfather of the Oxfordshire Downs, Mr. Hitchman and Mr. Rowland," and not forgetting " The breed and breeders of other classes of sheep," for which Mr. Lord, of Stanton Harcourt, a long-woolled breeder, returned thanks. " The health of Mr. Middleton," who suggested the change of name, and who was the originator of the present meeting, was also drunk with great enthusiasm, and after several other appropriate toasts the company dispersed.—*Oxford Journal.*

BATH AND WEST OF ENGLAND SOCIETY FOR THE ENCOURAGEMENT OF AGRICULTURE, ARTS, MANUFACTURES, AND COMMERCE.

The monthly council of this Society was held on Saturday, August 29th., at Waghorn's Hotel, Taunton, Charles Aaron Moody, Esq., M.P., in the chair. There were likewise present, Messrs. Acland, Sillifant, Hussey, Gordon, Hooper, R. May, Smith, King, Knollys, Porter, Baan, Morle, Thompson, J. Gray, Cotterell, Widdicombe, Gillett, Hole, R. Badcock, Danger, Farrant, Fry, Newman, Belfield, Clarke, and Dickinson.

The chief business of the meeting had reference to the proposed exhibition and annual meeting in the district of South Wales in 1858. A deputation consisting of fourteen members of the council assembled at the Cardiff Arms Hotel, Cardiff, on the morning of the previous day (Friday), where they were met by the Mayor of Cardiff, with Messrs. Williams, E. Davies, Corbet, and other gentlemen, forming the local committee, from whom the members of the deputation received every courtesy. The latter then inspected the various sites selected by the local committee, and Mr. Sillifant, the chairman of the deputation, now reported as the result of that inspection, that they were unanimously of opinion that the land on the south-side of the Cathayes Park, offered by Mr. Richards, on behalf of Lady Bute, was the most eligible site for the show-yard.

The recommendation was agreed to.

It was unanimously resolved, on the motion of Mr. Belfield, that it be referred to a committee consisting of the Director and the Stewards of the past year, together with Messrs. Wippell and Hussey, to consider and report on the whole subject of the Veterinary Inspector; and especially with reference to the courses which should be adopted on future occasions in respect to animals which may be disqualified by him or otherwise, and which, but for such disqualification, would have been entitled to the prize.

Mr. T. D. ACLAND brought up the report of the Finance Committee, but no discussion of importance arose upon its recommendations.

The several committees were appointed to settle and prepare the Prize Sheets for the Society's Show of 1858.

The following new members were elected, viz. :—Farrant, William, Torquay, Devon; Heath, W. E., Gas-works, Honiton, Devon; Hobbs, W. F., Boxted Lodge, Colchester, Essex; Hudson, John, Castle Acre; Leach, Wm, Kentisbeare, Devon; Leigh, James P., Richmond, Surrey; Perry, Robt., New Farm, Priston, Somerset; Trehonmais, M., London Farmers' Club; Warren, F. H., Dulverton, Somerset; West of England Land Drainage Company, Exeter, Devon.

THE CHEMICAL PROPERTIES OF THE POTATO,

AND ITS USES AS A GENERAL ARTICLE OF COMMERCE WHEN PROPERLY MANIPULATED.

[*Read before the British Association for the Advancement of Science.*]

It is the impression in the United Kingdom generally that the potato is simply a useful vegetable, well suited to be boiled, baked, or mashed; but beyond that, its properties and uses are little, if at all, known—certainly not amongst the so-called public; and it is only within recent years that any use whatever was made of it as an article of manufacture.

In the year 1834 the article of farina starch, for dressing muslins, was first manufactured from it in Ireland, which increased until the year of the potato blight, 1846, when it ceased, but is now again in practice. Beyond this, and its sale as household starch—for instance, the Glenfield starch—and not a little as "Indian arrowroot," its produce is, in fact, unknown to the commerce of this country.

Abroad it is not so. In France farina is largely used for culinary purposes. The famed gravies, sauces, and soups of France are largely indebted for their excellence to that source; and its bread and pastry equally so: whilst a great deal of the so-called Cognac imported into England from France is the produce of the potato. Throughout Germany the same uses are common; and in Poland the manufacture of spirit from the potato is a most extensive trade. "Stettin brandy," well known in commerce, is largely imported into England, and is sent from thence to many of our foreign possessions as the produce of the grape, and is placed on many a table in England as the same; whilst the fair ladies of our general country perfume themselves with the spirit of potato under the designation "Eau de Cologne."

But there are other uses which this despised esculent is turned to abroad. After extracting the farina, the pulp is manufactured into ornamental articles, such as picture-frames, snuff-boxes, and several descriptions of toys; and the water that runs from it in the process of manufacture is a most valuable scourer. For perfectly cleansing woollens, and such-like articles, it is the housewife's panacea; and if the washerwoman happens to have chilblains, she becomes cured by the operation.

Now all the uses I could ever discover for the potato in Ireland in former times, beyond that of boiling, is summed up in a song which lauded the properties of a certain variety called the "Buck Potato," in great estimation at the time that the ladies of Ireland wore "high-call'd caps:" each verse ends—

"Then cut the buck in two,
And 'twill make you starch and blue
For your high-call'd cap,"

which possibly suggested the use to the proprietor of the Glenfield starch.

But I neither seek the manufacture of brandy, eau de Cologne, picture-frames, nor toys from the potato. What I desire is to see it converted into a staple article of food; and if I can enlist in my views the support of the scientific, I would hope for a good result: hence why I do myself the honour of addressing this section.

We all know that food of a description suitable to support mankind in health, must contain three special constituents, viz.:—

First, starch, sugar, gum;
Second, oily substances;
Third, albumen, gluten, &c.

And I may say that the only vegetable substance of general commercial use, which is supposed to contain these elements in proper proportionate quantity as food for man, is wheat. Oats are assumed to have too much oil; whilst peas and beans are said to have too much gluten. And there are many facts to prove that animals fed solely on these or other individual substances soon cease to live.

Dogs fed on gelatine alone speedily die; fed on wheaten flour, they close their lives in some 50 days. Rabbits and guinea pigs, fed solely on oats, solely on barley, cabbage, carrots, &c., usually die in 15 days. Yet it is a fact beyond all dispute that, up to the period of the potato blight, the Irish cottier peasants, amounting to perhaps one-half of the whole population, lived to a good old age, and reared large families, fed upon the potato alone!

The natural inquiry that strikes the mind is, what are the constituents of the potato, to produce such results?

It is a fact that the potato contains some 75 per cent. of water; but what does the residue contain? What are the actual nutritive components? They are as follow:—

Of starch	..	..	84.077 per cent.
„ gluten	..	..	14.818 „
„ oil	..	..	1.104 „

And what are the nutritive constituents of wheat?

Of starch	..	..	78.199 per cent.
„ gluten	..	..	17.536 „
„ oil	..	..	4.265 „

Thus we find that the essential elements of nutrition are identical in the potato and wheat, whilst the small deficiency of gluten and oil (bone-and-sinew-producing matter) is compensated by the increase of starch (flesh-and-fat-producing matter). And it is unquestionable that the oil and gluten of wheat rest principally in that part of the grain which is not used for human food, namely, the bran and pollards; whilst the entire dry matter of the potato is suited for conversion into food of several kinds.

With such facts to guide us, is it not reasonable to inquire—Why should the potato be used merely as a garden vegetable? Why is it not converted into an article of commerce, as meal and flour, of wheat, oats, &c?

In order to show you that such might be done, I shall now beg your attention to the samples which I have the honour to present.

The first is the *whole meal* of potato, analogous to the whole meal of wheat. In that sample is contained starch, oil, and gluten, in or about the proportions I have stated; and strange to say, that preparation will scarcely change by either time or climate. I have had similar sent to the tropics, and it has been returned perfectly unchanged; and a quantity made under my direction, at the South Dublin Union, in the year 1846, remained for two years in the cellars of that establishment, without decaying or taking mould.

The second preparation is the *first flour* of the potato, in fact a pure farinacious matter, deficient only in gluten; therefore not desirable for the manufacture of bread by itself, but specially desirable when mixed with wheaten flour.

The third preparation is the *second flour* of the potato; it contains gluten and oil, and is capable of making by itself a very nutritious bread.

The fourth preparation is a substitute for *oaten meal*, and when intermixed with a small quantity of the latter, the porridge made from it is highly nutritious, and scarcely to be distinguished from oatmeal porridge.

It must be evident that such productions of the potato are capable of being converted into a great variety of food; and, with your permission, I shall read you a short description of a déjeûner supplied by the potato, or nearly so.

I would now beg attention to the results to be obtained by the nation, by manipulating the potato as proposed, and thus increasing the quantum of food to be stored up for the public use.

The argument used against the general cultivation of the potato is, that it contains 75 per cent. of water, whilst wheat and oats contain, say but 5; and that therefore it is unsuited for cultivation as a staple article of food, because, weight against weight, grain gives 95 per cent. of food, while potatoes give but 25 per cent. And it was also assumed that the dry product of the potato was simply starch—which is an error.

But the question in reality is—NOT the quantum of food to be found in a given weight of potatoes, as compared with a given quantity of wheat: it is, the quantum capable of being produced from a given quantity of land. The former is, I conceive, the grand mistake which has been made on the subject. All the arguments used, to abolish the cultivation of the potato, have been founded on this misconception. It has been designated the "root of evil"—gravely declared by authority to have "little or no nutrition as compared with grain"—has been called "the most wasteful crop, and the least desirable food"—all because it contains 75 per cent. of water, which has in reality, nothing to do with the question of the quantum and quality of the nutriment to be obtained by its cultivation, as I shall now hope to prove to you.

Cultivate an acre of land with potatoes, and a similar quantity with wheat, and convert the produce from each into dry matter. Then taking the lowest average production of the potato, and the general average of wheat, the result will be found as follows:—

The dry matter of potato will give a total of	4,076	lbs. per acre.
Whilst the dry matter of wheat will give but	1,055	„ „
There will be found in the produce of the potato	3,427	lbs. starch.
„ „ wheat	825	„ „
„ „ potato	604	„ gluten.
„ „ wheat	185	„ „
„ „ potato	45	„ oil.
„ „ wheat	the same.	

Thus the actual quantity of food to be produced from an acre of land cultivated with potatoes is nearly four times the quantity from an acre of land cultivated with wheat; and the quantum of nutrition in the dry matter of potato, weight for weight with wheat, is almost alike.

Therefore if the same extent of land now cultivated with wheat be devoted to the culture of the potato, and converted into meal, flour, &c., as I propose the quantum of food equally nutritive to be had from the potato, and stored up for national use, will be nearly four times the quantity of food to be had from the culture of wheat.

I should then hope, if you find my figures correct and my facts true, that I shall be honoured by this section in support of my proposition, which is one open to the whole community to test, and most simple and inexpensive in the process of manipulation.

J. W. R.

AWARD OF THE DUKE OF NORTHUMBERLAND'S FARM PREMIUMS.

The annual competition for the premiums given by his grace the Duke of Northumberland, for the best-managed farms on his grace's estates at Stanwick, and those of the landowners on the adjacent parishes, came to a close last week. For the most part, agricultural competition is confined to stock and implements; but it seems to have occurred to his grace that it was highly desirable to afford some similar impulse to improvement over the entire farm, and to apply a test, success under which would require excellence in every department of a well-cultivated farm. His grace, therefore, offered a prize of £30 for a farm exceeding two hundred acres, and £15 for a farm not exceeding two hundred acres, but more than twenty acres. The prizes were announced to be open for competition to all tenant farmers residing in the townships of Stanswick, Aldbrough, Melsonby, Gales, Dalton, Forcett, Eppleby, East and West Layton, Caldwell, Barforth, Cliffe, Maufield, and to all tenants of his grace in Yorkshire. The awards, it was intimated, would be given for good cultivation, state of fences and gates, roads, water-courses, buildings (as far as they depend on tenants), live stock, implements, best-kept accounts, use of artificial manures or the contrary, and including every thing connected with good husbandry, the prizes to be adjudged by three competent judges, when the crops were near maturity. The prizes were arranged to be given for three years, and a successful competitor was not to be entitled to gain a prize in two consecutive years, The management of this competition was entrusted to Mr. Archd. Moore, his grace's agent at Stanwick. The gentlemen whom Mr. Moore was so fortunate as to secure for the performance of the important duty of judges were Mr. Joseph Snowball, of Netherwitton, agent of the Earl of Eldon, Mr. Edward Lawson, of Redesdale Cottage, agent of Lord Redesdale, Admiral Mitford, &c., and Mr. Robert James Wiley, of Winterfield, Catterick, agent of his grace the Duke of Leeds; and it is not going too far to say that to the able and impartial manner in which they have performed their task, is due the success of an experiment which might possibly otherwise not have survived the first year. Competitors were required to signify their intention to compete on or before the 13th May, 1855, and the two succeeding years; and the first award was made in the second week of August, of 1855; the second in the week ending the 30th of August, 1856; and the third, made last week, completes the term over which it was intimated that the competition would extend. The general result is that there have been sixteen entries in all; and it may be accepted as indicative of the feeling of the competitors, that everything was satisfactorily conducted; that one competitor offered himself twice, on the second occasion obtaining the prize; and that two other competitors entered the list of competition every year. Though not successful in gaining the prize in their different classes, they received—what was nearly of equal value—the high, twice repeated, and unanimous commendation of the judges. The competitors to whom we have alluded are Mr. Richard Kay, of Forcett Valley, the tenant of John Mitchell, Esq., of Forcett Hall, an extensive and liberal-minded landlord in that quarter, and who gained the prize in the second year; and Mr. John Clark, of Aldbrough, and Mr. George Bowes, of Layton Moor Farm. For the smaller prize of £15 on this occasion the successful competitor was Mr. James Newhouse, who occupies a farm at Caldwell, under the Earl of Brownlow. This farm, which has been in the occupancy of the same family for two or three generations, is of 123 acres, about half tillage and half pasture, beautifully situated on a sloping ground. It is unnecessary to particularise the various features of this farm, which, like all that were inspected, is cultivated on the four-course shift; and the excellent cheeses produced from the dairy of this farm, under the name of Caldwell cheese, have obtained considerable fame. Mr. Bowes, who also competed for this prize, and is a tenant of Mr. Kemp, is, it will be seen, highly commended. For the larger prize of £30, the competition, which was extremely close, was eventually narrowed to Mr. Henry Eales, the holder of 320 acres of good and advantageously situated land, held under Mr. Kemp, at East Layton; and Mr. Clark, the tenant of a fertile and admirably-situated farm of 425 acres at Aldborough. Mr. Eales had about 100 acres in grass, and the remainder in tillage; Mr. Clark had about half in tillage and the other half in grass. On both farms, especially on that of Mr. Clark, considerable attention had been given to stock, and several fine animals were inspected. The course and excellence of husbandry of the two were not much unlike; on the farm of Mr. Clark, it having come under review, on three different occasions, the improvements in many respects were more apparent. Up to a certain point there is little doubt that he would have carried off the premium, the successful reward of spirited competition over three years, and the merit of which would have been enhanced by the circumstance that, though his younger competitor now appeared for the first time, he had manifestly been preparing for this trial in the previous years. It was in this nicely-balanced condition of the scales that the judges, after going over the bulk of the farm, went to complete the examination by inspecting three fields which lay apart from the rest of the farm, at a considerable distance along the road, which probably on that account had not received the same attention as the rest of the farm; and it appears to have been the state of these fields, part in fallow and part in beans, which decided the competition against him, without detracting, however, from the merit which belonged to him for his management of the body of his farm, and to which the judges paid a merited tribute of commendation. The inspection closed on Thursday afternoon, and the judges then compared notes, and gave in their decision to Mr. Moore as follow:—

AWARD OF THE JUDGES.

We having been appointed to award the prizes given by His Grace the Duke of Northumberland, of £30 and £15, for the best-cultivated farms within the townships of Stanwick, Aldbrough, Melsonby, Gales, Dalton, Forcett, Eppleby, East and West Layton, Caldwell, Barforth, Cliffe, Manfield, and including all tenants of his Grace in Yorkshire, hereby award to Mr. Henry Eales, of East Layton, tenant of Edward R. Kemp, Esq., thirty pounds, being the sum to be awarded for the best-cultivated farm exceeding two hundred acres, and to Mr. Jas. Newhouse, of Caldwell, tenant of the earl of Brownlow, fifteen pounds, being the sum to be awarded for the best cultivated farm not exceeding 200 acres, these premiums being awarded with reference to the cultivation of the farm, the state of the roads, fences, and gates, water-courses, buildings, live stock, implements, best-kept accounts, the use of artificial manure, and including everything connected with good husbandry.

In making this award we think it due to Mr. Clark, of Aldbrough, to state that, with the exception of three fields, we considered the merit between Mr. Eales and him equal, and that great credit is due to him for the improved management and the state of his farm. We are also glad to observe the continued great industry of Mr. Bowes, of Layton Moor, and the neatness and cleanliness of his farm.

This being the concluding year of the competition, we consider it proper on our part to state that we have been informed generally, and it is also our own conviction, that the object for which these premiums were given has to a great extent been accomplished, and that they have created a greater spirit for agricultural improvements amongst the farmers in the district.

Robert James Wiley,
Edward Lawson,
Josh. Snowball.

With reference to the concluding paragraph of the award, it may be observed that it was apparent, on visiting the farms, that great interest and a salutary stimulus to improvement had been afforded by these prizes, which it was stated by an extensive landowner of the neighbourhood had extended more or less to the neighbouring farms not in competition, and thereby operated to the advantage of both landlord and tenant; that the liberality of His Grace had been generally appreciated; and that the result of these annual competitions had been to excite a healthy emulation, and, as the judges observe, "create a greater spirit of emulation among the farmers of the district." The judges had also on this occasion to perform a slight supplementary duty, namely, to decide a match between Mr. Moore, His Grace's agent, and Mr. Kemp, to whom reference has already been made, for the best field of turnips, which, on inspection, they decided in favour of Mr. Moore. It may be added that on this, as on former occasions, a party had been invited to share the hospitalities of Carlton Hall.—*Newcastle Courant.*

THE INSECT PESTS.

An interesting subject presents itself to our notice; and, with a view to its elucidation, we proceed to state a few facts connected with it.

We now especially allude to the prevalence of insects at particular seasons. In many, we are altogether exempt from them, in others we are subjected to their ravages to an extraordinary extent.

The year 1856 was remarkable for the myriads of the turnip-beetle (*Altica nemorum*) that prevailed throughout this country. The year 1857 has been equally remarkable for its absence, and in some districts as altogether so (of course we are now speaking more especially of a single locality, as exemplifying others). Undoubtedly there are exceptions to the rule; but, upon a broad basis, the result in one year has been reversed in the next.

The pest next to the turnip-beetle, in point of destructiveness to our turnip crops, is produced by the black caterpillar, the larvæ of the *Athalia spinarum*, which last season devastated whole districts, and is again this season showing itself to an almost equal extent. We have just witnessed, in several large fields of the common turnip, that they had already attacked nearly every plant, and that to all appearance the crop would be destroyed. Still, as many pieces last year entirely recovered the scourge to which they had been subjected, we are not without hope that a similar result may follow in the present autumn.

Again, the aphis tribe, infesting our beans, peas, hops, and vegetables, prevail in certain seasons to a very great extent—upon some plants in particular; whilst upon others their attacks are scarcely visible. This is more especially the case with the aphis infesting the hop; and they are also attacking the pea and bean. It has long been observed by country people that a good hop and pea crop rarely occur in the same years, and we have observed on various occasions it has been verified. Upon the China roses of last year these insects were exceedingly prevalent; this year but few have been observed.

We adduce these examples only as affecting the general prevalence of any particular insect for one or for many years together, and then, on the other hand, its disappearance almost entirely for many years afterwards. This shows that such occurrences are not entirely dependent upon seasons, but rather are influenced by mysterious causes which we are unable to fathom.

The prevalence or non-prevalence of the turnip-beetle has ever been notorious. In some seasons the crops are devastated by its ravages: in other seasons it scarcely appears, and they escape altogether. This probably may be dependent upon the intensity of cold of the preceding winter, as the insect does not appear to take any extraordinary precaution towards its own safety. This has been verified by many of our correspondents, who state they have found them in considerable numbers in a torpid state during the winter months, only partially protected by the covering obtained in old decayed stubs of thorns in hedge-rows, and in similar situations.

As regards the black caterpillar secondly adverted to, it is the larvæ of a peculiar description of fly, the females of which are of a dirty yellow colour, the males much larger, and of a dusky grey. These, doubtless, remain in the chrysalis state during winter, and most probably at such a depth in the soil as to render them secure from the severity of the weather. The dryness of the two preceding winters may have been conducive to their preservation, and thus it may be that they are this year equally prevalent with that of the preceding one. An observation, however, that we are about to make tends rather against this supposition. We have for many years been connected with a considerable occupation, and until the year 1856 had never experienced any attack from this pest. Last year, however, a large breadth of the common turnip was apparently destroyed by them, the ribs of the leaves alone remaining to tell the tale of the work of destruction that had been going on. This year a repetition of the attack has taken place, and probably will become as extensive as in that of the preceding season. This we are not much surprised at; but what does rather puzzle us is that for 30 years preceding, upon the same farm, we have no recollection of their having ever appeared.

The tribe of insects next adverted to is that denominated the *aphis*, and is known to everyone from its destructive effects upon the pea, bean, hop, and many plants of the brassica tribe, especially of the Swedish turnip and cattle cabbage, whilst the common or white turnip is rarely, if ever, affected. Mangold wurzel is also exempted, not only from its attacks, but also from the attacks of insects altogether, to a greater extent than any other vegetable whatever; and this circumstance alone points to it as a vegetable deserving our best attention and cultivation. It has the property also of resisting the effects of drought better than any other cultivated root, and is capable of being grown upon a greater variety of soil than the turnip.

All insects of the aphis tribe appear more dependent upon atmospheric agency than any others with which we are at present acquainted. A dry north-east or north-easterly wind appears to very much favour their production, arising from their peculiar habits and modes of procreation, being at some periods oviparous and others viviparous, or both together. A single impregnation of the male suffices throughout several generations, and tends to their increase in a most marvellous and astonishing manner. These insects have been this season less prevalent upon our roses than usual, but the pea and bean crops have suffered considerably from their attacks.

A A

THICK AND THIN SOWING.

TO THE EDITOR.

Sir,—If my memory be correct—for I have not the work by me—the celebrated or notorious Mr. Horne Tooke begins one of his controversial letters thus: "War, physic, and divinity against one poor parson—fearful odds!" But what was a phalanx of mortals, however formidable for its mental and corporeal prowess, to the recorded exploits of a demigod-hero, who can be visible or invisible—a lump of inert clay, or a mere nebulosity—as may best suit his purpose for achieving some notorious or disreputable act? Or, whilst engaged with a mortal, he may skulk out of the contest enveloped in his cloud, as did his prototype, the redoubtable hero Paris, who, it will be remembered, whilst engaged with the manly Menelaus, whose wife he had stolen, fled from the contest, concealed by a lady.

But this modern mythological hero, the hundred-eyed "Argus," hides himself in his cloud, and is afraid to be visible, because there is such a mortal in the world as the aged and unwarlike incumbent of Wix. Oh, shame on the dastard! hang a calfskin about his recreant shoulders!

But he trembles at Mr. Wilkins's personalities! If the hero fought with honourable weapons—if he entered into the contest armed with the breastplate of truth, as every honourable mortal does—the shield of faith would be his also, and he would require no hundred-eyed demigod to guard him from an aged, unoffending, and unwarlike parish-priest. No: but he is afraid of the personalities of Mr. Wilkins! Like the renowned tailor of Brentford, rather, he, as all cowards are, is afraid of himself.

The fact is, Mr. Editor—and I here, *in limine*, proclaim it to the numerous readers of your journal—the being, whether mortal or not, who metamorphosed himself from a hundred-eyed demigod to an Essex farmer (for "I am an Essex farmer," the hero cries out), was afraid of Mr. Wilkins—and this, I state, is the highest compliment to Mr. Wilkins—because he knew he had taken his pen in hand, as I shall show, regardless of truth, regardless of honour, and to write, I may state, a whole tissue of accusations which he knew, or ought to have known, were not true.

But how is it, Mr. Editor, that a practiser of, or a writer on, agriculture, if he diverges from the customs of his forefathers, or if he writes that the modern practice of husbandry is not the very acmé of perfection, should immediately become a marked man—a target to be shot at? And his enemies are not here and there only, a few scores or hundreds in a place; but they are legions, visible and invisible, mortals and demimortals, of all shapes and all sizes—one-eyed, like the giant Cyclops, Polyphemus; or two-eyed, like common mortals; or hundred-eyed, like the jealous goddess's cowkeeper, the world-renowned and drowsy hero, Argus. How is it that a man cannot act and talk and write on this subject of agriculture, without bringing down upon his devoted head envy, hatred, and malice sufficient, if not armed with the breastplate of truth, to crush or annihilate a whole country? It was so with Tusser, and so with Tull, both of whom were persecuted nearly to the death, though no two Englishmen ever did more good. And it is so with every one who dares to proclaim that modern farmers, without exception, are not the fattest, the plumpest, the cleverest, the most learned and scientific, chemical and mechanical, theoretical and practical men the world ever produced. How is this?

Some years since, a clergyman, in writing to me, stated that a parishioner of his was growing, on what had been called a very poor farm, extraordinary crops of corn, roots, and grass, by an improved method of tillage, and from the blood, &c., which he purchased from some slaughter-houses; yet the man (who, my friend said, was a most quiet and inoffensive one) was so persecuted, that he was afraid to go to market, to sell the produce of his farm! The clergyman also, who followed his parishioner's plan as to his meadows, the produce of which his liquid manure more than doubled, received the same persecution; and on one occasion, some gentlemen at an inn, on a market-day, composed an address, and then walked in a procession, with musical instruments which they obtained from the inn-kitchen—such as warming-pans, frying-pans, dish-covers, and I know not what besides—and read the address aloud, first before the clergyman's house, which was in the street, and then before the poor bewildered farmer's.

Are not such scenes and persecutions as these, Mr. Editor, a satire upon our age? and are they not disreputable to all who engage in them? Many farmers—I may say, most of them—are among the most hospitable of men. I myself esteem very many of them most highly. But why should they so much dread investigation? why tremble at discussion? Why should an humble individual like a parish minister cause them so many sleepless nights? why should he be the subject of so much discussion at market-tables?

It is unaccountable; but the thorough-drainers, deep and thorough-cultivators, moderate-seeders, horse-hoers, want to raise rents! This is the cry, but the most senseless that ever was used, or can be used. It is farmers themselves alone who can raise rents. All the writing and all the discussions in the world cannot raise the price, except most temporarily, of any marketable article; and land is nothing else than a marketable article, depending entirely, as to its price, as everything else does, upon the supply and the demand for it.

In ancient days, in all the highly civilized countries of the world the most highly-talented of the human race, the richest endowed, by Divine assistance the greatest favourites of Heaven, were those who practised and wrote upon agriculture. As a proof of which, we may, mentally at least, pass through ancient Egypt, the cradle of all the arts of the remotest periods after the Flood; thence to China, and the East Indies; and thence back to the Holy Land, wherein, 900 years before Christ, agriculture, as we read in the 19th chapter of the first book of Kings, was in a state of perfection which would put to shame that of every country in modern times. And those who practised it, as I have stated, were the greatest favourites of Almighty God, himself being miraculously chosen to impart His will to all His humam creatures.

From the Holy Land we pass into Persia, thence back into Greece, and thence to ancient Rome. In all which countries the most highly-endowed with mental talents, most learned and scientific, wrote and discoursed on the improvements and blessings of agriculture, but without offence; as we read of no persecutions, of no mock processions, of no insults heaped upon them, of no Arguses hurling envenomed shafts, skulking behind the spread-out tails of peacocks. No, no: in those days, and in those countries, all the writers and discoursers on agriculture were honoured, and held in the highest esteem by their fellow-men, as the greatest benefactors of their race.

And from Greece and Rome, if we return to the Holy Land, we find the Redeemer himself drawing the sublimest divine truths, for his parables and discourses to the people, from rural affairs and agricultural operations.

In our own country also, in the middle, and what we call the dark ages, churchmen had their lands in the highest possible state of perfection, whilst the lay lands were, in comparison, not half-cultivated and nearly barren.

These are facts which none can deny; and yet Mr. Wilkins, whose chief writings are intended to draw the attention of men to them, is set up as a target for every cowardly scribbler to hurl envenomed shafts at, dipped in gall, as if he were guilty of some monstrous crime against his fellow-man or deadly sin against his God.

But who is this Essex farmer, as he calls himself? And he may be one, for aught I know to the contrary; but he is not an Essex man. This I state without fear of refutation; for he has left footmarks behind, sufficient for me to trace him much farther north than this home county. Your country readers, Mr. Editor, will wish to know who this Argus also is, whose name the Essex farmer has assumed, and of course of whose exploits he approves and would imitate, as is always the case when one man assumes the name or would imitate the actions of another.

This Argus, then, once lived somewhere; but where I am not able to state, nor when am I able to state; but the time was when men were very queer creatures, and performed very strange exploits. Some of them were visible and some invisible; some had one eye, and some two, and some none; but this Argus was endowed with exactly 100, two of which were always to keep awake and wide open, whilst the other ninety-eight might fall asleep.

It so happened that in those days, whenever they were, there was a very beautiful young priestess of the name of Io, of whom an old lady called Juno, who had a very faithless old husband, was racked with jealousy. On this account she engaged this Argus with his hundred eyes, two of which being always awake, to keep watch over the priestess against the designs of the old husband. But in the mean time, the husband, whose name was Jupiter, as he could do anything, changed the young priestess into a young cow; and he employed another worthy, of the same fraternity as himself, to lull the two eyes of Argus, the young cow's keeper, to sleep with the other ninety-eight, and then he put him to death for his faithlessness. Juno, the wife, being a thrifty old lady, and not willing to lose the 100 eyes of her faithless servant, transferred them to the tail of a peacock, where we read they have remained to the present day.

Now what there should be in this Argus that an Essex farmer should assume his name and identify himself with, I am scarcely able to guess; but the natural conclusion is, that instead of the young priestess having been metamorphosed into a young cow, she was changed into an Essex calf, some of which, we know, both as to size and weight, are larger and heavier than very many cows. And this opinion, I think, is strengthened by the fact that many writers, who have recorded this fact, state clearly that it was a heifer, and not a full-grown cow, into which the young lady was transformed; and as the difference between a heifer and an Essex calf is so trifling, the mistake might very easily have been made; for even at this day, one is often sold for the other.

It is astonishing how associations of this kind occupy some men's minds, and what a train of thought they raise up in them. Here a calf was elevated to the honour and dignity of a priestess; that is, both were made one and the same thing in different shapes. The monster, Argus, was elevated to the honour and dignity of being the calf's-keeper; and an Essex farmer dreaming upon these things, so fills his mind with them, that he at length in his imagination fancies himself to be Argus, as many men fancy themselves to be kings. Nor are these romantic fancies altogether new; but one of the very wisest of the sons of men possessed them. Pythagoras affirmed that he had once been Euphorbus, and that he recollected many exploits which Euphorbus did; and that he was at the siege of Troy, though that remarkable siege at which Euphorbus was present took place some 700 or 800 years before Pythagoras was born.

Hence, these reveries are common to the wisest as well as the most crazed of mortals; and, hence, as many men, as we know they do, who are near Brentwood, fancy themselves to be kings, and many women believe themselves to be queens, we may easily conceive how an Essex farmer may have fancied one of his fine calves to be Io, and himself her hundred-eyed keeper. The associations were natural, and thus easily explained.

But, Mr. Editor, it is time, and more than time, that I examine the self-metamorphosed Argus's letter; but as I have already written, I fear, as much as you can find room for, I will only to-day give you one specimen of the modern demigod hero's statements; but I promise to go through his Tornado, as he chooses to designate my humble self, on the very first opportunity, leaving him to chuckle over his exploit at least for another week. For a specimen then of the veracity of his statements, I take this, which is nearly his first:

"Mr. Wilkins," he writes, "neglected the cultivation of his bit of glebe in such a manner that at length, with thin seed or no seed, it was equally the same in result—the crop was not worth shearing. I am now speaking of facts; and those facts, as well as others equally startling, are notorious throughout the district in which he resides."

Mr. Editor, if you or any other gentleman will call upon me and if you or he should not find that every word of this passage is an unprincipled falsehood, I will pay your or his expenses to and from my house.

The real fact is, that my bit of glebe, as the demigod hundred-eyed hero calls it, has improved every year since I have been in possession of it; every succeeding crop has excelled the preceding one, and the last crop has been the best, I may say very much the best, in weight, quality, and quantity, that my glebe in my remembrance ever before grew. So much for the veracity of a writer who shrinks from appending his name to his statements; not because he trembles at an aged man like Mr. Wilkins, but because he knows what he states will not bear the light, and that he can traduce under a veil, and with impunity.

The man who writes or speaks the truth needs no shield: he fears no man: he has a shield which no man can penetrate: he has a breast-plate which no man can injure: he has a Friend who sticks closer to him than a brother, and who will never leave nor forsake him, but be his shield and buckler for ever.

Some years ago I raised up hundreds of the anonymous scribes against me also; but the world was with me, as was and has been proved by the friendships shown me; and these friendships will not be weakened by gross and malicious anonymous writings. GEO. WILKINS.

TO THE EDITOR.

SIR,—Having read two letters in the *Mark-lane Express*, written by a clergyman from Wix, who appears not only to rest content with the welfare of his flock in administering his understanding for the Almighty, but also leaves his profession, and attempts to teach the agricultural community generally of the advantages which would accrue from the adoption of his system of thin-seeding. However, sir, before I proceed with a reply to our learned friend's advice, allow me to bring before your and the public's notice what is already being the result with me in regard to the advocated system of a few isolated individuals.

About a year ago—having read in the *Express* two or three letters emanating from the pens of the Messrs. Hardys on the subject—I was led to try the experiment; and for this purpose I selected three acres of the very best land belonging to my farm. I manured and tilled it, as I thought, with the nicest skill, then deposited a bushel and a-half of seed per acre (the usual quantity being three bushels per acre). The young wheats came up nice and even, but of course very thin when contrasted with the rest of mine and that of my neighbours. I watched its progress almost daily during the spring, and the time when nature was causing it to tiller. Each time I did this, I scrutinized the adjoining part of ten acres; and the verdict I gave on each occasion was that *thick sowing* was far preferable to that of thin. I could not say that any difference existed in the difference of tillering between that of thin and that of thick-sown. Now, while I am writing, I can tell the Messrs. Hardy and our reverend gentleman that I greatly regret of my ever trying their system. I firmly believe that 2½ qrs. will be the maximum produce per acre, whereas the adjoining ten acres I dare almost guarantee to average 4 qrs. to the acre.

To be sure, what a contrast this is, Mr. Wilkins, and what, or how, do you account for this? I don't wish to say that the plan will not answer upon some soils; but it must be a mixed one, and thoroughly cultivated, kept in good heart, freed from all weeds, and, if wet, well drained—such as I presume his and those who advocate it to be. However, the purport of my letter is to rise caution in the minds of my brother farmers, and, if they will try it, let them do it on a small scale. Let Mr. Wilkins, or any other scientific and practical farmer, farm upon the wolds of Yorkshire and Lincolnshire, and I am certain he will fail in his undertaking in respect to making the most of his farm, if he should begin as a thin seedsman.

I am, sir, yours truly,
Pocklington. AGRICOLA.

TO THE EDITOR.

Mr. Editor,—I think I ought, in self-defence, to inform you and the readers of your very widely-circulated journal that I did not write the article which has so much excited the ire of the person who has appended "Argus" to his letter, until after I had been repeatedly applied to, to do so; and even then, recollecting the personal attacks made upon me some few years back, I consented with great reluctancy, on the personal application to me to write, by an esteemed friend.

I believe the classical readers, who deemed what I wrote worth their perusing—and I know that many of them did—perceived that much that I wrote, which excited the ire of modern farmers like this "Argus," were mere transcripts from ancient agricultural treatises, which I, in my mistaken imagination, concluded would have been interesting, if not to the general reader, at least to those for whom they were especially designed. I advocated nothing new; like a sculptor or architect, whenever I wrote, or whenever I practised, I always placed ancient models before me; and I stated that the principles I contended for were always contained in those ancient writings, and that I advocated nothing new. But, like Tusser and Tull and others—if I dare compare my humble doings to the noble achievements of those great men—I raised hosts and hosts, legions I may state, of anonymous ignorance against me. Also whithersoever I went, I was assailed; whatever I did, I was assailed in the doing of it. If I attended an agricultural meeting, I was pelted, or attempts were made to pitch me headlong down the stairs leading to it. If I happened to pass through a market, I heard sounds like these, "There goes the parson who wants to raise rents," &c. On one occasion an aged man, at an agricultural meeting, received on his head a missile intended for me, which caused great pain, and raised a large swelling. And if I remained silent, I was personal! And, if I walked away, I was personal! If I made a speech, the mere transcript of some ancient writer, and I gave it as such, I was personal! In fact, do what I would or say what I would, or write what I would—for I scorned anonymous writings—I was personal! And it has ever been the same with all who, if the farm, do not in everything go on in the old beaten track, or, if they write or speak, do not preclaim to the world that farmers are the wisest, most learned, most scientific, amiable, and knowing men the world has produced.

Now, that farmers are like other men, no one can deny; but their isolated occupations fill their minds with many deeply-rooted prejudices. I never blamed them for farming as they were taught; but I do blame them for not trying some experiments, or for looking with so much envy upon those who do. Suppose a man had a farm of 300, 400, or 500 acres, would it not be wise of him in these days of science and advancement to set aside say ten or twenty, or even five only, for experiments? But, "no," he says, "I never did alter and I never will; and hence men are found unblushingly to publish that he requires three bushels of seed-wheat—as *vide* the letter of "Agricola"—for an acre of land, and that when he sows a bushel and a-half only, he has no crop, or next to none, or, as he states, 2½ quarters an acre only, whilst many men, with much less than his smaller quantity, grow between 5 and 6 quarters, and some even full 6 quarters. The Hardys, last year, grew 4½ quarters of wheat, and 100 bushels of potatoes an acre; that is, the wheat and potatoes grew together in alternate rows, and the produce was from each acre what I have stated it was, and their crops this year are far better than they were last year; and this "Agricola's" lands and produce would be the same, were the Hardys the occupiers of them, who would cultivate thoroughly and seed rationally.

But my object is not with "Agricola" but with "Argus," against whom, should my readers conclude I am too harsh, I will ask them to suspend their judgment until they shall have read through my letter; and I ask them also to keep "Argus's" letter constantly before them until I have done with him.

I have shown how directly opposite to the truth was what the man had the audacity to write about my "bit of glebe," as he calls it; and I state that any gentleman who thinks it worth his while may inspect the glebe and inspect the crop, and refute the falsehood himself.

But after having stated—and I suppose unblushingly—that I have ruined my "bit of glebe," the man writes thus with reference to Mr. Sheriff Mechi and me.

"Mr. Mechi," he writes,—and what will not low, vulgar, prejudice drive men to perform? but of Mr. Mechi and me the man writes thus: "Mr. Mechi had found out by bitter experience that Mr. Wilkins's thin-seeding processes had not promoted the credit side of his balance-sheet, and he had been impudent enough to state in print that *six* pecks of seed-wheat per acre (twelve gallons) was the proper quantity. This brought down the anathemas of the reverend gentleman in several letters, showing him up as an apostate from the faith as proposed by himself, Newington, Hardy, and others.

Thus writes this "Essex farmer" as he terms himself; but he is not an Essex man; but thus the man writes who calls himself "Argus" and an Essex farmer also.

But is this true? Is there a word of truth in this? Let us see. But first let me state that I never knew that Mr. Mechi had stated that six pecks of seed-wheat was the proper quantity, nor do I believe that he has, of late years at least, ever so stated.

But let us turn to Mr. Mechi himself, and let him speak for himself, as he does most boldly and eloquently at all times.

Mr. Mechi has lately published a pamphlet with this title, "How to Farm Profitably, by Mr. Sheriff Mechi;" and the work is divided into sections, one of which is headed thus, "Evils of Over-Seeding;" and under this head he writes thus: "My usual quantity of seed per acre is, of wheat one bushel."

Now every one knows that a bushel is four pecks only; and yet this unscrupulous, unblushing anonymous scribe has had the audacity—the infamy, to publish to the world that Mr. Mechi had advocated half as much seed again, and that his having done so had drawn down the anathemas of the reverend gentleman! Some divines tells us, Mr. Editor, that man is, mentally and bodily, a mere mass of corruption; and, if this "Argus" be a type of the race, I should conclude the doctrines of these divines are the correct ones. But the man goes on, and, leaving Mr. Wilkins, makes a furious onslaught on the inventor of the patented dibble, and, having finished him up, as he flatters himself, he utters more of the poison, of which he appears charged to the overflowing, on Messrs. "Hardy and others;" but who the others are he shrinks, though concealed under his mask, to show.

He then returns to the attack on Mr. Wilkins, and not being able to write the truth himself, and as it is the nature of a wicked man to think all as wicked as himself, he accuses Mr. Wilkins of falsehood, because he stated that a moderate seeder had for several years together averaged 48 bushels of wheat per acre.

Mr. Editor, I am personally known to many of the subscribers to your journal, and by reputation, I conclude, to yourself and many more also; and I here state that although I do not blazon abroad the name of a tenant-farmer who so far by skill and industry surpasses his neighbours, yet if you or any other honourable man will favour me with a call, I will direct you or him to the farm, and to the occupant of it, to which I alluded when I stated that the average wheat produce of the farm was 48 bushels an acre.

I add, also, for the information of my friends, that I never refer to a crop or crops of any farm or farms, without having previously had personal knowledge of the crop or crops; and I repeat again, and emphatically also, that I know the farm well, the tenant of which is a very moderate seeder, and the crop of wheat of which averages upwards of 48 bushels an acre.

And let me also add, and this ought to be well pondered upon, that the wheat so grown, every year sells, because it is the heaviest, at the very highest price of the market.

I now, Mr. Editor, again, as I did some years since, bid adieu to anonymous slanders, with this remark—that science, knowledge, and advancement can only be promoted by truth. If I had unwarily made a mistake, and had any gentleman pointed it out, he would have received nothing but courtesy from me. But when a man like this calls upon the world to avoid "Mr. Wilkins's personalities," and then makes the most furious personal onslaught upon him and all his unoffending friends, and by deliberately-invented false statements also, Mr. Wilkins, as an example to all others, hurls him sprawling and wallowing in his own mud, and there to lie until he discovers, if he be not entirely devoid of shame, that truth and honesty are the best policy.

Geo. Wilkins.

TO THE EDITOR.

Sir,—Most of your readers, as well as yourself, must have perceived, from the tone of the letter of the Rev. Mr. Wilkins, the necessity of my keeping my name concealed. He is, as I before stated, so unsparing in his epithets, that no decent person feels inclined to become bespattered by them.

Some eight, ten, or even more years ago—I cannot tell exactly how long, as we glide so swiftly upon the stream of time as to become unconscious that we are moving onward; however long it may, it was soon after Mr. Wilkins had been seeking public notoriety respecting the cultivation of his glebe, I think of from three to five acres, without manure—I felt induced to inspect it, and was taken to the spot by a friend I was then visiting. The crop had been sheared, as I before stated, and the field itself bore evidence of the preceding crop having been a wretched one, and the state of cultivation then was as bad as any I had ever before seen. This would have been matter of indifference on my part, had Mr. Wilkins not drawn attention to his cultivation as *par excellence*, but what his neighbours will readily testify was then, and had long been far otherwise.

I am no stranger to the writings of Mr. Wilkins; I have generally read them as rather *racy* productions, and have replied to them in other periodicals; but I found such disposition on his part to fell me at the first onslaught, by that species of attack as exercised in his last letter, that I declined the contest. Having no desire to enter the lists personally with such an antagonist, I, however, forwarded my name to yourself (as the *Times* observes), as a guarantee for the good faith existing betwixt yourself, myself, and the agricultural community.

You will recollect, in my last letter, that I challenged Mr. Wilkins to name the *large farmer* who had been so successful a cultivator upon his (Mr. Wilkins') thin-seeding process, as to have produced for several years together *upwards of six imperial quarters per acre*, and I ventured to express a doubt upon the subject, which is now strengthened by Mr. Wilkins having in his reply blinked that question altogether. But having asserted it in a public manner, allow me to say that, unless he confirms it, his future observations will pass for exactly so much as they may be considered worth by your numerous readers.

Mr. Wilkins asserts that Tusser, by his writings, was a martyr. That I deny. No man was more read and quoted by the farmers as an authority, for upwards of a century after his works had appeared. Like many *later* authors, he was decidedly a bad cultivator himself. Quarles (who lived upon a farm adjoining the one Tusser cultivated), in his Book of Emblems, says he was a rolling stone, and gathered no moss; "like the whetstone to the scythe, he remained blunt himself; but applied to the minds of other men, he notwithstanding made them cut." But that he was ever persecuted on account of his writings, I deny. The famous Tull set up a new theory of cultivation which did not succeed, and ended in his ruin, in the pursuit of which he, however, elucidated other principles in farming (especially the drill system) which have since been turned to beneficial account; but that we should have been able to produce grain crops in succession for a long series of years together from the same soil, without application of manure, is too absurd, under our present chemical knowledge, to obtain credence; and not, like Mr. Wilkins, having a manure store near, to which he could resort, he ultimately failed.

If Mr. Wilkins really has so much agricultural knowledge as he professes, he ought to have learned ere this that, unless a sufficient supply of manure is added to the land after a grain crop has been taken, sufficient time must be allowed to enable it again to produce another; but if manure can be obtained in sufficient quantity, and the soil is also kept in good state of tillage, it might then be cropped successively for many years together. Mr. Wilkins, at the period I alluded to, professed to have produced great crops by thin seeding and without manure. I visited the spot, to ascertain how far this statement was correct, and found that certain misgivings existed upon the subject, about of the same nature as have been found to exist when individuals have professed to live without food for many weeks together. Indeed some confirmation of the fact of manure being applied was almost as strong as "proofs of holy writ." Others saw, or fancied they saw, manure on the road, or even under the process of application. I of myself know nothing; but the sly nods and winks at the market-table indicated something curious in the background. No one is more desirous than myself to investigate and to record improvements in agriculture; but of late we have had so many charlatans writing upon that subject, that it needs more eyes to detect them than are possessed even by

Sept. 2. ARGUS.

TO THE EDITOR.

SIR,—I will not trouble you with so long a letter as the reply of the Very Rev. G. Wilkins; as I should have guessed, if he had not said so, that he was a parson or had been to College, or he could not have written such a settler to "Argus" as he has done. Talk about a hundred eyes! it would put a five-hundred-eyed Argus to rights, in my humble opinion. I wish I could write such letters, I would without a moment's delay have recourse to something which should beat Holloway's Pills, or I would have a go-in against the noted Geo. Robins. With such a revolver in his hand as the rev. gent. holds, I certainly believe any man may go slick through America, or California and not meet with a match. And to think that an Essex calf, big or small, should have mooed in his hearing! But then what can be expected from a calf, whether bull or heifer? Why, perhaps they may take more notice of a moon-raker like myself than they would of a very learned parson. And so I will venture to give them advice: Drop your seeds wide and far between; then shut your eyes and open your mouths, and see what God will send you. And you anonymous scribes, put your names to your letters, and be not afraid of the servant of the meek and lowly Saviour, who when he was reviled, reviled not again; for sure, unless the parson has a stock of sermons by him, it must interfere with his sacred duties to have to write such long letters as the one last week to that mythological hero "Argus."

Sir, I wish a wise man or a prophet were among us moonrakers; we should appreciate him. It is what I have been wanting to find out for some time, how to get a great deal from a little, and some of my neighbours are just in the same fix. I am, sir, yours respectfully,

JOHN HAINES.

Manningford Mill, Pewsey, Wilts.

BOYDELL'S TRACTION ENGINE.

THE LOUTH TRIAL.

The Committee appointed by the Tetney and Louth Agricultural Societies to inspect the operations of Boydell's traction engine on the occasion of the recent trial of the invention in Lincolnshire, have just made their report. They observe:—"It appeared to your Committee that the ploughing on the first day was not so successful as anticipated, owing to a variety of causes unconnected with the traction power of the engine. Amongst these we may name that the ploughs used were not constructed on the best principles for being thus worked; further, they were not well adjusted. Failures of this kind are not to be attributed to the traction engine. The Committee feel convinced that experience will shortly remedy defects in the adjustment of ploughs attached to this engine, and they would suggest the practicability of fixing ploughs within a frame, or some other mode, in order that they may work simultaneously at equal depths. But, without any arrangement of this kind, the ploughing was improved upon in a very marked manner on the second day. Indeed, before this trial closed, the general company ceased following the ploughs, convinced, as it would appear, that the problem of ploughing by steam had been so far satisfactorily solved; and thus prejudices that had previously prevailed were left like other cumbersome, but far more serviceable articles, to be dragged at the heels of Boydell's engine. And here the Committee would pass on to notice other implements more readily adjusted. The trial of Coleman's cultivator, followed first by Crosskill's clod crusher, afterwards by the Cambridge roll and expanding harrows, was in the highest degree successful. The ground, baked as it was at the surface, was, with its stiff tenacious subsoil, stirred to the depth of five or six inches; and by the combined action of the three implements, a good seed-bed was made at once. Cotgreave's trenching plough, with subsoil ploughs attached, breaking up the ground to the depth of twelve inches, did the work well. No doubt could exist as to the success of these experiments. Results were attained for which horse-power could not, in our opinion, be made available. It is somewhat difficult to institute an exact comparison between the power of this engine and that of horses; but according to the best estimate your Committee are able to form, they are of opinion that while Coleman's cultivator was being used, the draught was equal to that of sixteen horses and upwards; and while Cotgreave's trenching and subsoil ploughs were at work, a uniform power of not less than twenty horses was employed. The work done by six ploughs was nearly at the rate of one acre per hour; that by Coleman's cultivator nearly two. With reference to the traction power of the engine on common roads and over a farm, this was fully and satisfactorily proved by the engine drawing four waggons, heavily laden with chalk and road-scrapings, weighing altogether about 18 tons, across scarified land, on rather rising ground. Two of these waggons were drawn up a hill, the gradient being one in nine, and the weight of the two laden waggons being upwards of 10 tons, independently of the engine and its equipments. From the experiments made on the above days, your committee are led to the conclusion that the great features in the character and construction of Boydell's engine are its capability of laying down its own railway in endless succession, of travelling upon it in any direction under the complete control of its driver, and its immense power of traction. They see no reason why the cost of working it should much exceed the cost of working any other ten-horse power engine. In short, they recognize in this invention a great motive-power at a comparatively small working-cost, requiring what experience alone can give—a better knowledge of the proper mode of attaching and managing the implements to make it available for the farmer's purposes. Taking into account the extent of work it is capable of performing, your Committee consider that, after allowing great latitude to the estimate of the cost of working (£2 per day), as detailed in the *Engineer*, it must in this respect contrast favourably with the expense of horse draught; favourably also as regards working duration, steadiness of action, and economy of time. Your Committee are conscious, however, that it is only after careful trials that men's minds will be made up. At present there may be a difference of opinion as to the extent to which the powers of this engine may be applicable to the operations on the farm; but enough, in our opinion, has been proved to establish the fact that the agricultural world is greatly indebted to men like Mr. Boydell, who are thus providing unforeseen facilities for meeting the requirements of an age marked by progress in everything which appertains to civilized life. May success attend their patriotic efforts, and reward their skilful exertions for promoting the public good.

(Signed)—

George Alington (Chairman),
H. W. Alington,
D. Briggs,
J. Byron,
R. Chatterton,
S. Gibbons,
W. Chatterton,
C. North,
T. Randell,
J. Robson,
C. Sharpley,
W. H. Smyth,
F. Sowerby,
J. Sowerby.

The report is also countersigned by Mr. A. Veitch, Hon. Sec. Tetney Agricultural Society, and Mr. J. W. Wilson and Mr. W. T. Kime, Hon. Secs. Louth Agricultural Society.

DURHAM COUNTY AGRICULTURAL SHOW.

The annual meeting of the Durham County Agricultural Society was held at Stockton on Friday, Sept. 4, There was a most magnificent array of shorthorns, the very best animals which the country could produce having been sent to compete for the Challenge Cup of 100 guineas value and the other liberal prizes given by the society. The cup prize was won by Mr. Richard Booth, of Warlaby, near Northallerton, with a splendid two-year-old heifer, in-calf, called "Queen of May." This heifer had previously carried off several important prizes. In 1856 she was shown at the Royal Agricultural Society's Exhibition at Chelmsford, and won the first prize; and in the same year she was equally successful at the Great Yorkshire show held at Rotherham. In the present year she carried off the second prize at the Royal Agricultural show at Salisbury, the judges, after much deliberation, awarding the first prize to Colonel Towneley's Rose of Athelstane. She subsequently obtained the first prize at the Great Yorkshire show held at York. In addition to carrying off the special prize, Queen of May obtained the first prize in the class for two-year-old heifers in calf.

Colonel Towneley's Victoria was considered the next best animal on the show ground. In 1856, as a heifer, she obtained the first prize at Chelmsford, and at Salisbury in the present year she gained the first prize for cows. At the Royal North Lancashire show she was exhibited at one, two, and three years old, and carried off the principal prize on each occasion in the class in which she was shown. At Rotherham and at Craven last year she carried off the first prize in the two-year-old classes; and in the present year she gained the first prize for fat cows at the Great Yorkshire show.

The prize for the best bull of any age was awarded to Mark Antony—a beautiful animal of a white colour, belonging to Mr. Mark Barrowby, of Dishforth, near Thirsk. Last year he obtained the second prize for two-year-old bulls at the Royal Show at Chelmsford, and the first prize in the same class at the Durham County Show held in the city of Durham.

General Haynau, belonging to Mr. John Watson, of Longwathley, received the second prize. This animal had previously won several prizes, and, among others, he won the second prize at the Paris show. Ivanhoe, Lord Scarborough, Alma, and

Duke of Cambridge, among the defeated animals, had all carried off prizes at various local shows.

There was a very fine collection of young animals in the class for bulls under two years of age. Sir Edmund Lyons, bred by Mr. F. H. Fawkes, of Farnley Hall, Yorkshire, carried off the first prize. This bull is considered one of the finest of his age, and has carried off the first prize at every meeting at which he has been shown, including Salisbury and York. The second prize was awarded to Mr. Thomas Wetherell's Statesman.

The first prize in the class for the best cow in-milk or in-calf was awarded to Colonel Towneley for Victoria, already mentioned, Mr. Booth's Bride Elect obtaining the second prize. Queen of May, in the class for two-year-old heifers in-calf, experienced a keen competition from Rose of Towneley, belonging to Colonel Towneley—a beautiful heifer, which had carried off the chief prizes at Craven, Salisbury, York, and other places. Sunflower, belonging to Mr. Thomas Wetherell, of Aldborough, and Louisa, belonging to Mr. John Emmerson, of Over Dinsdale, also exhibited in this class, received the highest commendations from the judges. In the classes for year-old heifers and heifer calves under twelve months old, Mr. Richard Booth again secured the principal prizes.

The horses, especially the hunters and agricultural breeds, were of a very superior quality, and the capabilities of the former were practically tested by being leaped over good stiff hurdles in the presence of judges. The shows of sheep, pigs, and poultry were only of an ordinary description, but there was a very numerous collection of agricultural implements. The annual dinner afterwards took place in the Borough-hall, and was presided over by Mr. H. J. Spearman, of Newton-hall, near Durham.

REVIEW.

AN ELEMENTARY COURSE OF BOTANY.

By Professor Henfrey. London: 1857.

Our readers will recollect that some months since, we had occasion to notice a highly scientific work, the joint production of Professors Henfrey and Griffiths, entitled "A Micrographic Dictionary." We are glad to learn that it has had a rapid sale, and that a second edition has already been called for—a convincing proof of the estimation in which it is held by the scientific world. We have now the pleasure of again meeting one of these gentlemen in the field of scientific literature, a candidate for its honours and rewards; Dr. Henfrey having just sent from the press a new work on botany, which we think is destined to add to his fame, and prove equally successful with his former publications.

Botany, although probably, with the exception of astronomy, the oldest and best understood of the physical sciences, has only at a comparatively recent period received its present development. This is, in fact, the case with all the physical sciences, the date of their rise going no farther back than the middle of the 17th century; since when a constellation of luminaries have appeared above the literary horizon, by whom the laws of nature have been defined and laid open, the knowledge of which has now reached the culminating point, where all the physical sciences unite as in one common centre. Chemistry, micrography, comparative vegetable anatomy, have unfolded the physiological characteristics of plants, and by separating their component parts have brought us acquainted with the laws of their production, the sources of their sustentation, and their peculiar properties.

Dr. Henfrey's work is professedly "An Elementary Course of Botany," but it contains information that will be useful to the more advanced students. In composing it, he has departed from the commonly received methods of imparting that science. On this subject he remarks: "Notwithstanding the author's own labours have been chiefly in the field of physiological botany, he quite concurs with the opinion expressed by the distinguished authors of the *Flora Indica*, who believe that disservice is done to the cause of botany by occupying the attention of students in the first instance with the abstract parts of the science. The largest class of students of botany are those who pursue the subject as one included in the prescribed course of medical education. One short course of lectures is devoted to this science, and three months is commonly all the time allotted the teacher for laying the foundation and building the superstructure of a knowledge of botany in the minds of his pupils, very few of whom come prepared with even the most elementary acquaintance with the science. .... If we endeavour to seize the floating conceptions furnished by common experience, and to fix and define them by a course of exact practical observation of the more accessible characters of plants—showing the relations of these as they occur in different divisions of the vegetable kingdom—we place the student in a position which enables him to proceed at once with an inquiry into the peculiarities of the plants he meets with, and in this way to acquire a fund of practical knowledge, which is not only absolutely requisite before entering on abstract inquiries, but is especially calculated to secure his permanent interest in the study" (Preface, p. 3, 4).

Convinced as we are that a scientific education must soon be considered in some degree essential to the higher class of agriculturists, and that this will necessarily include the study of botany, as a science the knowledge of which is intimately connected with his profession, we think Dr. Henfrey's work well-timed. The judgment he has exercised in departing from the usual routine of teaching, and coming at once to the practical part of the science, will greatly increase the usefulness of the work. The diversity of opinions entertained by scientific men, in regard to the various physiological phenomena of plants, would necessarily perplex a student upon his initiation into the study; but which, when his knowledge of plants and their classification is extended, will become the subject of discriminative reflection rather than of mistrust and doubt. Our author, therefore, has subordinated physiology to the other branches of the science, in practical teaching, which, in a large majority of cases, is addressed in the first instance to young persons who have never been grounded in the rudimentary principles of botany. When this first step is attained, and the student is advancing in a knowledge of structural and systematic botany, a course of physiological study will be entered upon with more facility and efficiency, and with far deeper interest.

With these views our author has comprehended the different branches in the following arrangement of parts:

Part I. Morphology, or Comparative Anatomy of Plants.
II. Systematic Botany.
III. Physiology, including Physiological Anatomy.
IV. Geographical and Geological Botany.

These are subdivided in a popular and practical manner, so as at the same time both to instruct and interest the student, by bringing him at once into contact with the business part of the science. The first brings the student acquainted with Structural Botany, or the organism of plants, as it presents itself to the naked eye, or under a lens of moderate power. The infinite variety of modifications which these assume in different plants cannot fail to engage the attention of a willing student, and prepare him for the second part, which introduces him to the various systems of classification adopted by different botanists, placing Linnæus, the father of modern botany, and the universal referee on all general subjects relating to that science, at the head. After this course the student is fully prepared for Part III., and, if he possesses a mind capable of appreciating the beautiful in structure and the sublime in perfection, he cannot fail to be both astonished and interested at the infinite variety and adaptation of the most minute organs which, under a powerful lens, present themselves to his view. Unlike the works of art, the more closely these are examined, the more perfect do they appear, and the greater the proofs of wisdom in their design, and fitness for the functions they have to fulfil. The fourth and last part, namely, Geographical and Geological Botany, brings the student to the subject of, firstly, the climatic arrangement of the vegetable kingdom, showing the peculiar vegetation of the different regions of the globe, and the modifications to which such plants are subject as are common to all climates; and, secondly, the progress of vegetation at far distant epochs of the world's existence, as exemplified in the fossil specimens revealed by geological investigation. This branch of botanical science is still comparatively new, and at present is kept separate from that of Botanical Geography, although the *principles* are common to both.

Such is a brief outline of the subjects comprised in Dr. Henfrey's work, which is illustrated throughout with a vast number of engravings, and that we have no hesitation in cordially recommending to the students and teachers of botany as the best elementary work yet published on the subject, and to the professed botanist as a valuable work of reference on the first principles of the science it treats on.

THE ROYAL AGRICULTURAL IMPROVEMENT SOCIETY OF IRELAND.

MEETING AT WATERFORD.

[We repeat the prize-lists of this meeting, those given last month being in many respects incorrect.]

AWARDS.

PRIZES FOR LIVE STOCK.

SHORTHORN CATTLE.

JUDGES.—Thomas Barnes, Moynalty, county Meath.
John Collie, Paulethie, Forfarshire.
John Unthank, Netherscales, Penrith.

Bulls calved on or after the 1st of January, 1852, and previous to the 1st of January, 1855.

First prize of £10 to the Marquess of Waterford, Curraghmore, Portlaw (Tyro).

Second prize of £5 to Mr. Chearnley, Saltersbridge (The Cuddy).

Bulls calved in the year 1855.

First prize of £20 to Mr. John Hunter, Loughmore Cottage, Templemore (Lord Garles).

Second prize of £5 to Lord Talbot de Malahide, Malahide Castle (Priam).

Highly commended.—Mr. J. Richardson's bull (Carlisle).

Commended.—Major Quentin's Hospodar.

Bulls calved on or after the 1st of January, 1856.

First prize of £10 to Mr. John Christy, Fort Union, county Adare (Foundation).

Second prize of £5 to Mr. Richard Welsted, Ballywalter, Castletown Roche (Napoleon).

Highly commended.—Mr. R. W. Reynell's bull (Lord Cosmo).

Cows in-calf or in-milk, of any age.

First prize of £10 to Mr. Rowland Campion, Old Town, Shanballymore (Jenny).

Second prize of £5 to Sir Robert Paul, Bart., Ballyglan (Evelyn).

Commended.—Sir R. Paul's cow (Lady Woodbank).

Heifers in-calf or in-milk, calved in 1854.

First prize of £10 to Mr. James Douglas, Athelstaneford, East Lothian (Rose of Athelstane).

Second prize of £5 to Mr. J. J. Turner, Kilcullen (Lily Grey).

Highly commended.—Mr. Turner's heifer (Ace of Hearts).

Commended.—Captain Ball's heifer (Gracious).

Heifers in-calf or in-milk, calved in the year 1855.

First prize of £10 to Mr. J. J. Turner (Queen of Trumps).

Second prize of £5 to Mr. Rowland Campion (Rosalie).

Highly commended. — The Earl of Clancarty's heifer (Patricia).

Heifers calved on or after the 1st January, 1856.

First prize of £10 to Mr. James Douglas (Third Queen of Trumps).

Second prize of £5 to Mr. J. Barcroft, Kilbogget Cabinteely (Maid of Kilbogget).

Highly commended.—Mr. J. Douglas's heifer (Venus de Medici).

Commended.—Mr. R. Campion's heifer (Mannelita).

OTHER BREEDS.

JUDGES.—Henry Croker, Drumkeen, county Limerick.
Samuel Garntt, Arch Hall, county Navan.
Robert White, Goolden, county Tipperary.

Devon bulls, calved on or after the 1st January, 1852.

The prize of £5 to the Earl of Charlemont, Marino, Dublin.

Polled Angus or Galloway bulls, calved on or after the 1st of January, 1852.

The prize of £5 to Lord Talbot de Malahide, Malahide Castle.

Ayrshire bulls, calved on or after the 1st Jan., 1852.

The prize of £5 to N. W. Roche, M.D., Fermoy, county Cork.

West Highland bulls, calved on or after the 1st Jan., 1852.

The prize of £4 to Mr. W. S. Trench, Cardtown, Mountrath.

Kerry bulls, calved on or after 1st Jan.

First price of £3 to Mr. W. Owen, Blessington, county Wicklow.

Highly commended.—The Earl of Charlemont's bull.

Devon cows in-calf or in-milk, of any age.

The prize of £4 to the Earl of Charlemont, for cow in-calf.

Devon heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £3 to the Earl of Charlemont for heifer in-calf.

Devon heifers, calved on or after 1st Jan., 1856.

The prize of £3 to the Earl of Charlemont.

Polled Angus or Galloway cows it-calf or in-milk, of any age.

The prize of £4 to Lord Talbot de Malahide.

Commended.—Lord Talbot's cow.

Polled Angus or Galloway heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £3 to Lord Talbot de Malahide.

Commended.—Lord Talbot's heifer.

Polled Angus or Galloway heifers, calved on or after the 1st Jan., 1856.

The prize of £3 to Lord Talbot de Malahide.

Ayrshire cows in-calf or in-milk, of any age.

The prize of £4 to Mr. N. W. Roche, M.D., Fermoy, county Cork.

Ayrshire heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £3 to Mr. N. W. Roche.

Ayrshire heifers, calved on or after the 1st Jan., 1856.

The prize of £3 to Mr. N. W Roche.

West Highland cows in-calf or in-milk, of any age.

The prize of £3 to Messrs. Wilson and Law, Screggan House, Tullamore.

West Highland heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £2 to Mr. W. S. Trench, Cardtown, Mountrath.

West Highland heifers, calved on or after the 1st Jan., 1856.

The prize of £2 to Mr. Trench.

Kerry cows in-calf or in-milk, of any age.

The prize of £3 to Sir Edward M'Donnell, New Haggard, Lusk.

Commended.—Mr. Francis Bland's cow.

Kerry heifers in-calf or in-milk, calved on or after the 1st Jan., 1854.

The prize of £2 to Sir E. M'Donnell.

Commended.—The Knight of Kerry's heifer.

Best of all the prize bulls exhibited at the show.

The GOLD MEDAL to Mr. John Christy, Fort Union, Adair, for short-horn yearling bull (Foundation) calved April 1st, 1856.

Best of all the prize cows or heifers exhibited at the show.

GOLD MEDAL to Mr. James Douglas, Athelstaneford, Drem, East Lothian, for a short-horned roan heifer (Rose of Athelstane), calved Dec. 25, 1854; produced a live calf Feb. 10, 1857.

The Purcell Challenge Cup of £100 (founded by the late Peter Purcell, for the best animal in the neat cattle classes, possessing most merit of its kind in the estimation of the Judges), to Mr. James Douglas (Rose of Athelstane).

HORSES.

JUDGES.—P. Sarsfield, Comyn, county Galway.
R. G. Talbot, Ballinclea House, Dalkey.
W. Torr, Aylesby Manor, Grimsby.

Stallions of any breed for Agricultural Purposes, foaled on or after the 1st Jan., 1850, and previous to the 1st Jan, 1855.

First prize of £30 to Mr. William Joyce, Abbey Farm, Waterford (Suffolk).

Second prize of £10 to Mr. James Corman, Cremore, Kilmuckridge, Gorey (Clydesdale).

Highly commended.—Mr. Wellesley Prendergast's Suffolk.

Stallions of any breed for Agricultural Purposes, foaled on or after the 1st of January, 1857.

First prize of £15 to Mr. Andrew Chalmers, Miner's Hill, Dalkey.

Second prize of £10 to Mr. J. Dickson, Gortnamona, Tullamore (Clydesdale).

The best stallion in the above sections, the medal to Mr. Wm. Joyce for his Suffolk cart stallion (Albert).

Draught mares in foal, or with a foal at foot, or having reared a foal in the year 1857.

First prize of £10 to Mr. David H. Sherrard, Thorndale, Drumcondra, county Dublin (Clydesdale).

Second prize of £5 to Mr. Silvester Rate, Rathmoyle, Edenderry (Clydesdale).

Draught fillies foaled in the year 1854. *No merit.*

Draught fillies foaled on or after the 1st January, 1855.

First prize of £5 to Mr. Silvester Rait, Rathmoyle, Edenderry (Clydesdale).

Second prize of £3 to Mr. Andrew Chalmers, Miner's Hill, Dalkey.

Draught fillies foaled on or after the 1st Jan., 1856. *No merit.*

SPECIAL PRIZES FOR ANY PURE AND DISTINCT FOREIGN BREED SUITABLE FOR AGRICULTURAL PURPOSES OR HEAVY DRAUGHT.

JUDGES.—P. S. Congreve.
R. G. Talbot, Ballinclea House, Dalkey.
W. Torr, Aylesby Manor, Grimsby.

Stallions of any age: 1st prize 500 francs; 2nd prize 300 francs. *No competition.*

Mares of any age: 1st prize of 400 francs to Major Quentin (French mare); 2nd prize of 300 francs to Major Quentin (French mare).

A Silver Medal to be added to the winners of the First Prizes, and a Bronze Medal to the winners of the Second Prizes.

SPECIAL HORSE PRIZES (HUNTERS).

JUDGES.—C. Garfitt, Tabley Old Hall, Cheshire.
C. Nainby, Barnoldby, Lincoln.
J. Scholfield, Howden, Yorkshire.

Weight-carrying thorough-bred stallions.

First prize of £50 and the Gold Medal to Mr. George Thompson, Ballingarry, Shinrone (Dey of Algiers).

Second prize of £30 and the Silver Medal to the Marquis of Waterford, Curraghmore, Portlaw (Barbarian).

Third prize of £20 and the Bronze Medal to the Marquis of Waterford (Lord George).

Weight-carrying hunter brood mares, having a foal at foot or being in foal.

First prize of £20 and the Silver Medal to Mr. W. M. Glascott, Alderton, Priest Haggard, New Ross (Lady Jane).

Second prize of £10 and the Bronze Medal to Mr. Wm. Quinn, Loughloher Castle, Cahir (Attraction.)

SHEEP.

JUDGES.—Luke Beauman, Lincolnshire.
Jno. Clarke, Long Sutton, Lincolnshire.
Jno. Hannam, Kirk Deighton, Wetherby.

LEICESTERS.

Shearling Rams.

First prize of 10*l.* to Mr. T. Garde, Ballinacurra, Middleton.

Second prize of 5*l.* to Mr. W. R. Meade, Ballymartle, Kinsale.

Highly commended.—Another of Mr. Garde's rams; and Mr. Campion's ram.

Commended.—Mr. Roberts (2); and Mr. Reynell's rams.

Two-shear Rams.

First prize of 10*l.* to Mr. R. W. Reynell, Killynon, Killucan.

Second prize of 5*l.* to Mr. Roberts, Stokestown.

Commended.—Mr. Garde's ram.

Rams of any age, not exceeding six years.

First prize of 5*l.*, and the second of 3*l.*, both to Mr. Garde, Ballinacurra.

Commended.—Mr. Campion's ram.

The medal for the best ram exhibited to Mr. Reynell's two-shear. The medal for breeder of to Mr. W. Angus, Neswick, York.

Pens of five Shearling Ewes.

First prize of 10*l.* to Lord Talbot de Malahide.

Second prize of 5*l.* to Mr. W. Owen, Blesinton,

Pens of five Ewes, not exceeding five years.

First prize of 10*l.* to Mr. T. Roberts.

Second prize of 5*l.* to Mr. T. Marris, Chase House, Lincoln.

Highly commended.—Lord Waterford's ewes.

Commended.—Mr. Owen's ewes.

Pens of five Ewe Lambs.

The prize of 5*l.* to Mr. J. La Touche, Harristown, Newbridge.

Commended.—Mr. Garde's lambs.

OTHER LONG-WOOLLED SHEEP, NOT QUALIFIED TO COMPETE AS LEICESTERS.

Shearling Rams.

First prize of 10*l.* to Mr. T. Beale Browne, Hampden, Andoversford (Cotswold).

Second prize of 5*l.* to Mr. Silvester Rait, Rathmoyle, (long-woolled).

Highly commended.—Mr. T. Beale Brown's Cotswold shearling.

Commended.—Mr. William H. Carroll's ram.

Two-shear Rams.

First prize of 8*l.* to Mr. William H. Carroll, Tulla House, Nenagh (long-woolled ram).

Second prize of 4*l.* to Mr. N. W. Roche, Fermoy, Cork, (long-woolled ram).

Commended.—Another of Mr. Roche's rams.

Rams of any age, not exceeding six years old.

First prize of 5*l.* to Mr. N. W. Roche, (four-shear long-woolled ram).

Second prize of 3*l.* (no competition).

Pens of Five-shearling Ewes.

First prize of 5*l.* to Mr. W. Beale Browne (Cotswold two-shear long-woolled ewes).

Second, no competitor.

Pens of five Ewes, not exceeding five years old.

First prize of 3*l.* to Mr. Beale Browne (Cotswold).

Second prize of 3*l.* to Mr. W. Roche (three-shear long-wool).

CHEVIOTS OR ANY OTHER MOUNTAIN BREED.

Rams of any age, not exceeding five years old.

First prize of 3*l.* to the Marquis of Conyngham, Slane Castle, Slane.

Second prize of 2*l.* to the Marquis of Conyngham.

Pens of five shearling Ewes.

First prize of 3*l.* to the Marquis of Conyngham.

Second prize of 2*l.* to the Marquis of Conyngham.

Pens of five Ewes, not exceeding five years old.

First prize of 3*l.* to the Marquis of Conyngham.

Second prize of 2*l.* to the Marquis of Conyngham.

SOUTHDOWNS.

Shearling Rams.

The prize of 4*l.* to Mr. T. Roberts, Farn Farm, Stokestown.

Rams of any other age, not exceeding five years.

The prize of 4*l.* to Mr. T. Roberts.

Pens of five Shearling Ewes.

The prize of 3*l.* to Mr. T. Roberts.

Pens of Ewes not exceeding five years old.

The prize of 3*l.* to Mr. T. Roberts.

Commended.—Mr. Marris's ewes.

OTHER SHORT-WOOLLED SHEEP.

The prize of 4*l.* to Mr. G. W. Lambert, of Beau Parc, Slane, for shearling Shropshire ram.

The prize of 4*l.* to the Honourable L. H. King Harman, for four-shear Shropshire ram.

Commended.—Mr. Lambert's four-shear Shropshire.

In the ewe classes there were no entries.

SWINE.

BLACK.

JUDGES.—Henry Battersby, Larkfield, Mullingar.
Caleb Goring, Traversol, Nenagh.
William Torr, Aylesby, Great Grimsby.

Boars under 18 months old.

First prize of £5 to Mr. William Joyce, Abbey Farm, Waterford (Berkshire).

Second prize of £3 to the Marquis of Waterford, Curraghmore (Berkshire).

Commended.—The Marquis of Waterford's Berkshire boar.

Boars over 18 months and under 36 months old.

First prize of £4 to Mr. William Joyce (Berkshire Champion).

Second prize of £2 to Lord Carew, Woodstown, Waterford.

Commended.—Lord Waterford's boar.

Boars in the above sections.

The prize medal to Mr. William Joyce, Abbey Farm, Waterford (The Berkshire Champion).

To the breeder of ditto, the medal.

Breeding sows under 18 months old.

First prize of £4 to Sir Robert Paul, Bart., Ballyglan, Waterford (Berkshire).

Second prize of £2 to Miss Fitzgerald, Kilmarnock, Ballybrack, county Dublin (Berkshire).

Commended.—Mr. William Joyce's Berkshire sow.

Breeding sows over 18 months old.

First prize of £3 to the Marquis of Waterford (Berkshire).

Second prize of £2 to Mr. J. P. Tynte, Tynte Park, Dunlavin (Berkshire).

Commended.—Mrs. Paul's Berkshire sow.

Lots of three breeding sow pigs of the same litter, not more than 10 months old.

First prize of £3 to Mr. William Joyce (Berkshire).

Second prize of £2 to the Marquis of Waterford (Berkshire).

Commended.—Mr. William Joyce's Berkshire sows.

WHITE.

Boars under 18 months old.

First prize of £5 to Mr. John H. Peart, Cappagh, Finglas, county Dublin (Cumberland).

Second prize of £3 to the Earl of Bessborough, Bessborough Park.

Commended.—Major Quentin's Cumberland boar.

Boars over 18 months and under 36 months old.

First prize of £4 to Mr. William Boyle Albert, Model Farm, Glasnevin (Windsor breed).

Second prize of £2 to the Duke of Leinster, Carton, Maynooth (Irish).

Best Boar in the above sections.

The medals, as exhibiter and breeder, to Mr. John H. Peart.

Breeding Sows under eighteen months old.

First prize of 4*l.* to Mr. R. Bowman, Ballinasloe (Cumberland).

Second prize of £2 to Mr. John H. Peart (Cumberland).

Commended.—Mr. Boyle's Warwick sow.

Breeding sows over 18 months old.

First prize of £3 to His Excellency the Earl of Carlisle, Castle Howard (Yorkshire).

Second prize of £2 to Sir Robert Paul, Bart., Ballyglan, Waterford (Cumberland).

Commended.—Mr. Boyle's Windsor sow.

Lots of three breeding sow pigs of the same litter, not more than 10 months old.

First prize £3 to Mr. William Boyle, Albert Model Farm, Glasnevin (Windsor).

Second prize of £2 (No merit).

EXTRA PREMIUMS.

To be competed for by *bona fide* tenant farmers of Ireland not paying more than £100 a-year rent.

Best breeding sows over 18 months old.

The prize of £3 to Mr. Mathias Harford, Moate, county Westmeath; for white Yorkshire sow, with litter.

Best breeding sow under 18 months old.

The prize of £2 to Mr. Samuel Kent, Ballycanvan, Waterford, for black Berkshire sow in young.

There were *no entries* in the tenant-farmer cattle classes.

IMPLEMENTS.

JUDGES.—John Clarke, Long Sutton, Lincolnshire.
John Hannam, Kirk Deighton, Wetherby.
Robert C. Wade, Clonabraney, county Meath.

For Hussey's reaping machine—20*l.* to Messrs. W. Dray and Co., Swan-lane, London.

There was no competition for the second-best reaping machine.

For patent hay-making machine, with double action and reverse motion—5*l.* to Smith and Ashby, Stamford, Lincolnshire.

Highly commended.—Richmond and Chandler's improved hay machine.

For patent horse rake—5*l.* to Richmond and Chandler, Salford, Manchester.

Highly commended.—J. Marychurch and Son's patent six-foot self-acting horse rake.

Commended.—R. Garrett and Son's improved patent lever iron drag rake.

For plough for general purposes—5*l.* to Robert Law, Shettleton, Glasgow.

Highly commended.—William Graham's improved wrought-iron plough for a pair of horses.

Commended. — Messrs. A. and T. Fry's registered press plough.

For the best instrument for breaking up the soil—5*l.* to Mr. E. H. Bentall, Heybridge, Essex.

For heavy harrow—3*l.* to E. H. Bentall, Heybridge.

Commended.—Henry Sheridan and Co.'s improved two-horse harrow.

For light harrow—3*l.* 15s. to E. H. Bentall.

For three-horse field grubber—5*l.* to Robert Gray, Belfast.

Commended. — William Graham's improved wrought-iron four-horse grubber or pulverizer.

For the best drill grubber—3*l.* to William Graham, Smithfield, Dublin.

Commended.—Robert Gray's parallel drill grubber.

For improved revolving horse-hoe and turnip thinner, for hoeing and thinning turnips on either flat or ridge lands—5*l.* to R. Garrett and Sons, Saxmundham, Suffolk.

For Suffolk corn and seed drill, adapted for drilling every description of grain or root crops—5*l.* to R. Garrett and Sons.

For improved steerage corn drill—5*l.* to W. L. Fisher, Hapston.

For the best machine for distributing portable manure broadcast—5*l.* to R. Garrett and Sons (Chambers).

For the best and least expensive liquid manure carriage and distributor—5*l.* to Hart, Gibbons, and Gibbons, Wantage, Berks.

Highly commended.—Allen and Mitchell's improved liquid manure cart.

For the best machine for sowing grass and clover broadcast—5*l.* to A. and T. Fry, Bristol.

For the best farm cart—5*l.* to Richmond and Chandler, for Busby's.

Highly commended.—J. D. Mitchell's farm cart.

Commended.—Dawson A. Milward's cart for general purposes; and Allen and Mitchell's improved farm cart.

For the best set of hand implements for the farm—3*l.* to John Edmundson, Dame-street, Dublin.

For the best set of drainage tools—3*l.* to John Edmundson.

For best set of farm harness, and most economical, with plain buckles—3*l.* to Hamilton Willis, Glencairn, Lismore.

For 10 cwt. weighing machine, without loose weights—5*l.* to Messrs. James and Malcolm, London.

Commended.—Messrs. Fanshawe.

For the best assortment or collection of field gates—3*l.* to Hernulewiez, Man, and Co., Belfast.

Highly commended.—St. Pancras Iron Works Company's stand.

For the best churn—5*l.* to Michael Shanahan, Clonea, Carrick-on-Suir.

Highly commended.—Moore and Clarke's Yankee Hydro-thermal churn.

For the best general collection of implements, £20 to R. Garrett & Sons.

For the second best general collection of implements, prize of £10 to Richmond & Chandler.

Commended.—H. Sheridan & Co.'s, Dublin.

For the best mowing machine suitable for cutting meadow grass, £20 to B. Moore and Clark, 133, High Holborn, London.

Highly commended. — William Dray & Co.'s mowing machine.

VERY HIGHLY COMMENDED FOR MEDALS.

Messrs. Garretts' combined straw thrashing and dressing apparatus; Garretts' prize portable steam engine of eight-horse power, and prize combined portable thrashing and finishing dressing machine.

Thomas Kennan & Co.'s collection of tools.

W. Forshaw's bone mill, and four-horse power bone cutting and rasping mill.

St. Pancras' Iron Company's stable fittings, and a full-sized model of a stall fitted up to show the patent manger, invented by Professor Varnell, of the Royal Veterinary College.

W. Cambridge's steam thrashing machine for small occupations, four-horse power portable steam-engine, and four-horse power portable thrashing machine.

EXTRA COMMENDED.

Richmond & Chandler's new chaff-cutters for small occupations.

Bentall's cake crusher and oil-cake mill.

Phillips' weed extirpator, Phillips' patent poppy and weed extirpator, and lever harrow and land fertilizer, exhibited by James Woods, Stowmarket.

Richard Perrott's portable three-horse power enclosed grazing machine, and George Perrott's patent portable two-horse thrashing machine, mounted for travelling.

Thomas W. Condon's two-horse thrashing machine and straw-shaker.

James' and Malcolm's root-weighing machine, for potatoes and other root crops in the field.

DAIRY PRODUCE.

Best firkin of butter, 70lbs. weight, independent of the firkin, suited for the English or London market, and made on the farm of the exhibiter during the season of 1857, £5, to Mr. Stephen Moore, Barne, Clonmel; second, £3, Mr. Samuel Riall, Annerville, Clonmel; third, £2, Mr. Maurice Cheasty, Fenmore, Tramore.

To the Dairymaid whose butter wins the first prize, and who shall have been at least six months in her employer's service (in addition to the society's certificate), £1, Stephen Moore, Clonmel, firkin of butter; second, 15s., Samuel Riall, Clonmel, firkin of butter; third, 10s., Maurice Cheasty, Tramore, firkin of butter.

Best firkin of butter, 70lbs. weight, independent of the firkin, suited for the foreign market, and made on the farm of the exhibiter during the season of 1857, £5, Edward Smith, Clonakilty, firkin of butter; second, £3 ditto.

To the dairymaid whose butter wins the first prize, and who shall have been at least six months in her employer's service (in addition to the society's certificate), £1, the dairymaid of Edward Smith, Clonakilty, for a firkin of butter; second, 15s. ditto.

Best cool of butter, 30lbs. weight, independent of the cool, and made on the farm of the exhibiter during the year 1857, £3, Lord Clonbrock, Ahascragh, best of all; second, £2, William, Power, Seafield, Kilmaethonas; best of all the prize butter exhibited at the show, the medal, Lord Clonbrock, Ahascragh.

FLAX.

Best bundle, not less than 16lbs. weight, of mill-scutched flax, being an average sample of the produce of at least half an acre of British growth, and of the crop of either the year 1856 or 1857, first prize, £3, David Patten, Doagheys, bundle of mill-scutched flax; second, £2, Charles J. Pownall and Co., Wilton Flax Mills, Enniscorthy, bundle of mill-scutched flax.

Best bundle, not less than 16lbs. weight, of hand-scutched flax, being an average sample of the produce of at least half an acre of British growth, and of the crop of either the year 1856 or 1857, first prize, £3, David Patten, Doagheys, bundle of hand-scutched flax; second, £2, Robert James, county Clare, bundle of hand-scutched flax.

CEREALS AND GRASS SEEDS.

For the best collection of cereals and grass seeds, first prize, £3, Major Quentin, Waterford, collection of beans, wheat, oats, ryegrass, &c.; second, £2, John Kennealy, Kyle, wheat, oats, and barley.

THE DINNER

Took place on the Wednesday evening. The Marquis of Waterford presided, supported on his right by his Excellency the Lord Lieutenant, and on the left by the Mayor of Waterford. The following were also present:—Lords Clancarty, Bessborough, Stuart de Decies, Carew, Shannon, Dunlo, Boyle, Royston. John Beresford, Cloncurry, St. Lawrence, Monck, and Doneraile; Sir Nugent Humble, Sir Benjamin Morris, Sir John Keane, Sir Robert Paul, Sir E. M'Donnel, the Hon. R. Talbot, the Hon. St. John Butler, General Roberts, Colonel Palliser, &c.

After the customary loyal toasts, the Chairman gave "The health of his Excellency the Lord Lieutenant," who, in responding, said—I rejoice that the annual cycle of this Royal Irish Agricultural Society has brought us on this occasion to the prosperous county and pleasant city of Waterford. We are here assembled at the very portals of our land. Time was, indeed, when it was more peculiarly their character, and when Waterford was more commonly near the place of arrival from the sister country than the metropolis itself; for it was in Waterford, as many of us well remember, that King Henry II., John, and Richard II. first planted their mailed feet upon the strand of Ireland; and I make no doubt that if in those days they could have been sure of finding here collected as goodly a muster of beeves and sheep as have this day greeted and gladdened our eyes, the visits of the Norman and Plantagenet kings would have been still more frequent, and their armies still more thronging than they were. However, in these times of peace and settlement, so far, indeed, as relates to the European world, I think it will be admitted that a better locality could hardly have been selected for the exhibition of this society than your city, with all our green island as a back country to furnish its evidence of agricultural advancement, and inviting the whole outside world to send its products in through your port and noble river. Owing to the time at which these annual exhibitions are held, I am empowered to gain the earliest insight into the abstracts of the agricultural statistics for the year just closed, which are always furnished by the industry and enlightened superintendance of the Registrar-General. This is a branch of knowledge in which our opposite neighbours in old, big England are still content to lay far behind you in Ireland. I will only present you with a very short summary of the leading results of what has been ascertained respecting the growth of the cereal crops and green crops, and the quantity of live stock in the year that has just closed, as compared with the year immediately preceding. In the growth of wheat crops in the year ending 1857, as compared with the year ending 1856, there has been an increase in acres under cultivation of 34,000 (hear, hear); and in the barley and rye crops of 27,000 acres. This is met by a decrease in the quantity of acres under cultivation of oats 55,000; but the whole increase in the cereal crops in the year 1857, as compared with 1856, may be reckoned as 3,000 acres. With respect to the green crops, there is an increase of 41,000 acres under cultivation of potatoes. In other green crops—except turnips, in which there has been a small decrease—there is an increase of about 8,000 acres; and on the whole the total increase of green crops under cultivation is 49,000 acres (Hear). The increase of acres in meadow and clover amounts to 65,000 acres; and the total increase in the extent of land under crops in Ireland this year, as compared with last year, amounts to 105,000 acres. With respect to the quality of live stock in Ireland, there is an increase in the number of horses of 27,000, an increase in the number of cattle of 30,000, an increase in the number of pigs of 332,000 (cries of oh, and applause); which is met by a decrease in the number of sheep of 241,000. This decrease in the number of sheep seems to me to be worthy of your consideration. I don't know to what causes it will be exactly attributed; perhaps the most pleasant cause to which to attribute it would be to a greater demand for mutton (laughter and applause); and consequently there has been, perhaps, a premature demand for lean sheep. Well now, these results seem to me to be, on the whole, of a satisfactory and encouraging character: not to be such as should make you content with the state of advancement to which you have already attained, but such as ought to stimulate you to continued and increased exertions in those pursuits which are healthful for the body, good for the mind, which we may be sure are public-spirited and patriotic, and which we may venture also to hope, though perhaps in a less exalted strain, will be found to be self-rewarding and remunerative. I do not know whether it will be reckoned one of the proper functions of a viceroy to use the office of admonition, as well as the more grateful and more royal office of approval. Perhaps this may be one of the uses of a viceroy which we have heard called into question—that a viceroy may admonish where a sovereign could only only approve. When I heard it insinuated, gentlemen, that even in this favoured county of Waterford, which I dare say may afford the same condition of things as many of the other counties of Ireland—that while there has been a very marked improvement within the two or three last years, both in tillage and in stock, in drainage and in the raising of fences, yet still landlords and tenants are to be found who allow themselves to be negligent about the state of the open main drains. It is a subject, I take it, of very intimate concern to the well-being of their estates; and I also think there may be reason to fear that, notwithstanding the active and enthusiastic exertions of my friend Mr. Donnelly, whose many public services I am to say her Majesty has lately been pleased to recognize, though some think not quite so appropriately as they might have been, inasmuch as she has made him a Companion of the Bath, and not of the Thistle (laughter); still it is to be feared that, notwithstanding those exertions, the general surface of Ireland does still continue to exhibit more than at least its proper proportion of weeds. I know that the total extinction of weeds must be a work of time—of gradual and continued effort, like all other great works; but, gentlemen, Delhi has not fallen yet, as far as we know, and Irish weeds are not yet extirpated; and I believe the one to be as essential to the real regeneration of Irish agriculture as the other is to the martial glory and stability of the empire. With respect to the exhibition of this day, I believe we shall all be justified in regarding it with unmixed feelings of approval and complacency; and I am sure there can be but one opinion as to the admirable character of the arrangements and the accommodation which was supplied (applause). However, gentlemen, on these points you will hear more precise observations, and more discriminating praise from those who are far more competent to speak upon such a subject than I could be. Indeed, I found in the course of the session, the labours of which are not yet brought to a close, I was something very like denounced, because it was presumed that I could distinguish a cow from a sheep. I do not know what will be said of my viceregal degeneracy to-day, when it becomes bruited that I have had—what I consider it a great honour to have had—a prize assigned to me for a breeding sow. However, gentlemen, I consider that a very shallow criticism which would represent an interest in Irish agriculture, and a pride in its advancement as qualities not desirable for an Irish ruler. For you cannot take into consideration the whole condition and circumstances of Ireland—her fertile but varied soil—her wealth of rivers and harbours—the habits and character of the population, and even her changeful climate and her weeping skies—which, however, have been in such happy suspension this day—you cannot take all these features and characteristics of Ireland into consideration without coming to the conviction that agriculture is the special field of development for Irish prosperity, and I believe for Irish greatness (applause). I consider her destiny as very much bound up in the manner in which she turns to advantage the rare capacities with which Providence has endowed both her soil and her people; and if this was the latest viceroy—a case, however, which I am far from wishing to anticipate (applause and loud cheering), I should feel neither regret nor shame if that wish would be embodied in the form of prosperity to Irish Agriculture.

His Excellency then gave the health of the Chairman, Lord Waterford, who becomingly responded.

Lord CLANCARTY in replying for the Royal Agricultural Improvement Society of Ireland, said the present was an age of unexampled progress, and when the great and blessed results which had accrued to mankind, through the application of steam and science to agriculture in Ireland, were reviewed, it was manifest that it had not been behind hand, and that of late years this country had made much greater progress than any other part of the world. Much as we were interested in any new discovery, he did not know of any in which Ireland had such vital concern as in the devising of any improved means for developing the resources of her soil, which was calculated to have an important effect upon the social welfare of the country. He was happy to admit that the Agricultural Society had been mainly instrumental in awakening, directing, and cultivating that spirit of improvement which had principally led to the great change within the last fifteen years which was so widely visible over the face of the land. The aids of science which were now brought to bear, not merely upon the cultivation of the land—that was to say, upon its reclamation and tillage, and upon the sowing of crops—but even upon the gathering in of the fruits of our industry, were such as was never heard of in days of yore; and when a comparison was instituted between the present and the former state of the country—the large area which had been brought from a state of barrenness to a state of productiveness and fertility—and also between the amount of beautiful stock now reared upon our pastures compared with what was formerly reared: all these facts incontestibly proved that a great change had come over the nation, for which that society might justifiably take some credit to themselves. But fifteen years ago he did not believe there was any country so backward in agriculture, and they had still much to do to attain to the position of those lands whose industry and skill they endeavoured to emulate—such as England, Scotland, and Belgium. They could scarcely hope, even at the present rate of progress, soon to overtake those countries; and even the most sanguine amongst them could hardly expect to live long enough to see the resources of Ireland's soil as fully developed as they were capable of being. But, in the meantime, they should feel great satisfaction in the thought that the means which had been adopted for the improvement of the country had been such as to be instrumental in uniting Irishmen of every creed and class. Associations had overspread the land, of which that society was the great centre, which had been the means of uniting in the spirit of co-operation all the energies of Ireland's propietary and of Ireland's tenantry.

Mr. TORR, having been called upon to reply for "the judges," congratulated the assembly upon the part of his colleagues and himself upon the very splendid exhibition which they had witnessed upon the present occasion. It had been his good fortune to visit many of the previous shows of the society, and upon no occasion had he seen one, taking it altogether, of so good a character; whilst the arrangements were so happily carried out as to give satisfaction not only to the judges, but, he trusted, to the public at large. In the statement so ably and carefully alluded to by his Excellency the Earl of Carlisle, there was one item which he lamented, although rejoicing at the general effect of the document. Lord Carlisle had told them of a large increase in the breeding of pigs, amounting to 332,000, at the same time that there had been a decrease in sheep to the extent of 241,000. Now, whilst pigs might be thought the glory of Ireland (laughter), he thought sheep far more valuable to the people; and though at the present time the humid climate, or, as it was graphically described by his Excellency, "the weeping clouds of Ireland" might be rather adverse to sheep, they might believe him, that when the country was thoroughly drained such would no longer be the case. Lord Carlisle had said it was easier for him to admonish than for a sovereign to approve, and if he would but admonish the sovereign of these kingdoms to make large open drains not only in Ireland, but in England, he would earn the lasting gratitude of his fellow-countrymen. His Excellency had also alluded to the increase of weeds; he (Mr. Torr) thought sheep the best destroyers of weeds, and if Ireland were largely sheeped they would have less rag-weed in the country. From one portion of Lord Clancarty's speech he altogether dissented: that part where the noble earl had quoted Belgium as an example to Irish farmers. Why, Ireland could beat her into fits. All he had ever seen in Belgium was that small farmers lived upon the produce they grew, and they excelled in the manure tank; but a fearful calamity, he hoped, had done away with an entire dependance upon vegetable diet in Ireland. It was some twenty-three years ago when he first visited this country, and he remembered long prior to the potato disease, and he felt confident that with the long duration of the famine had disappeared those days when 4d. was the value of a stone of potatoes, 4d. was the value of a day's wages, and 4d. a day kept a man's wife, and sometimes four children. The present era was more remunerative, first to the man who had survived these times and next to the man who had employed him; and he trusted if labour were a true source of wealth, which undoubtedly it was, that the labourers of Ireland would be well paid for their time, and that the farmers would find it to their advantage to do so. He would not detain them longer, but, as a member of the Royal Society of England, would, upon his own part and that of the other judges, return thanks to them and to the Royal Agricultural Society. He trusted these kindred societies would long continue to act as a Saxon brother and a Celtic sister for the advancement of agriculture and the well-being of those great nations.

Mr. DOUGLAS, in returning thanks for the exhibitors, intimated his intention in the event of his ever winning the prize cup of giving two others in lieu of it—one to the best male in the yard, and the other to the best female. He also suggested that the breed of short-horns would become greatly improved if the practice were discontinued of enforcing animals to be let out for service in this country.

Some other toasts followed, including "The Press," acknowledged by Mr. Purdon. The proceedings, however, were latterly seriously interfered with by the conduct of a person in whom the organ of "Order" was lamentably deficient.

THE TRIAL FIELDS AT WATERFORD.

Sir,—I was one of the very many who were privileged to attend the Royal Irish Agricultural Society's Meeting at Waterford. It was one of the most pleasing sights a true agriculturist could witness. The Show-yard was complete, even to minute details; not perhaps elaborated in the unexampled way of our own Society, under its inimitable director, the triennial establishment of stewards, and now the constant contractor. Thus everything is provided for; and our Irish brethren are fast approaching us—indeed in some of the details they excel us. With us, each locality successfully competing for the honour of entertaining our Society deposits a specified sum, to be at the disposal of the Society. In Ireland the local committee have the disposal of the sum thus raised, and lay it out as best they can to promote the success of the Meeting. We like our own plan best, as being most economical. Local committees must consist, for the most part, of new men, and of course not well acquainted with a Society's requirements. This year they have done admirably: the site of the Show-yard is all that could be desired. It is in a field, or park, in which stands the Court House, a building worthy of the country, with a noble front and handsome flight of steps of great length. In this front, and radiating from it, so as to include at one view the numerous classes, were placed the cattle and sheep under their well-contrived boarded shed; further to the east were the pigs; and around the outer boundary of this inner park were the horses. The implement department was in the adjoining park (now inaugurated by the Lord Lieutenant), to which is an entrance over a pretty bridge recently erected over a branch of the beautiful river Suir. The same idea appeared to advantage here. The whole of the sheds were so arranged as to present a front towards the centre in a modified octagonal form; thus giving it a pretty appearance to the numerous visitors patrolling the interior, and listening to the two bands, stationed conveniently for effect and to relieve each other. The whole arrangements reflected great credit upon the indefatigable secretary, the stewards, and local committee; to the latter body much had been delegated, and these powers they carried out with great spirit. Their promptitude was also very commendable: no sooner had the judges made their selections of implements for trial, than they were forthwith despatched to their respective trial-fields.

The first day, or rather the afternoon of Friday, was devoted to the trial of ploughs. But here we were disappointed, for instead of our favourite ploughing match, and the desire we had to witness a trial of Irish skill in ploughing, we were doomed to submit to view the uninteresting efforts of a single ploughman straining himself to make all the ploughs do equally well, and to produce the same clean-cut furrow, and good workmanship from every implement. This, of course, he failed to do; and the judges had the novel task of deciding upon the merits of the ploughs in the hands of a single chosen workman. I don't dispute the correctness of this mode of arriving at a right decision, but it detracts much from the interest of the trial.

On Saturday, the American Eagle mowing machine, the haymaking machines, and hay-rakes were tested, and very satisfactorily, as the judges were enabled, through the good management of the stewards, to proceed in their duties without hindrance, in an orderly and systematic manner, and who rendered to them every assistance.

On Monday the trial of reapers, mowing machines, grubbers, and ploughs took place; the latter being a renewed trial, to prove their usefulness in loose work, or as "general purpose ploughs." Here I would observe, that as the business of the meeting proceeded the excitement and interest of the visitors increased, and the numbers attending on Monday were inconveniently large, amounting to some thousands, all anxious to see the trials for themselves. After a time the efforts of the stewards and their assistants appeared in a slight degree to flag, so that about four o'clock p.m. all seemed verging into confusion. In our Society we have always a senior steward, who assumes the supreme direction in his year. At Waterford there appeared to be no presiding steward or managing director, so that very frequently orders were contradictory, and arrangements hastily made clashed with each other. The stewards were evidently gentlemen of high standing, and intent upon doing their duty; but when eight or ten gentlemen, or even more, including the society's stewards, the local stewards, with their assistants, proceed to act without a recognized leader, or a leader without prominence, it is not to be wondered at that some confusion resulted. However, all went on smoothly and pleasantly, until about the close of the reaping trial, or when sufficient ground had been cut to permit the trials of the ploughs, grubbers, &c., &c., to proceed. The reaper (for only one appeared—*i.e.*, Dray and Dean's) had cut round a large plot of wheat, and some difficulty arose relative to clearing it away for the next bout; and it was amusing to see one of the judges hopelessly engaged in instructing some brawny fellows in the mysteries of sheaf-tying, both by example and precept. They could not do it, and it was not till some ten or twelve strong women could be brought forward to tie, that the work could proceed; and it is but common justice to these women to say they did their work well, and with all that pleasing heartiness which gives such zest to any new engagement. At length a sufficient space was cut on either side the wheat-plot, and, as time was fast receding, the judges decided to take the ploughs and grubbers into work at the same time on either side this plot, to be visited by the judges, as required in exchanging. Well, here lay the difficulty. These spaces were filled with anxious beholders, intent upon seeing every novel reaping-machine. To clear these spaces seemed impossible: in vain the stewards shouted and rode menacingly at the people; they parted and closed immediately. Again and again the stewards galloped along to form lines; now angrily ordering the company back, now begging them to give room: all of which was immediately complied with, but was quickly forgotten, and little or no progress was made. The judges at length brought implements forward: first the hay-rake, to clear the land for ploughing, &c.; but neither leader nor workmen could be found who understood Mr. Fisher's mode of tipping; and one of the judges was compelled to work it himself, till relieved by one of the stewards. The ploughs were then brought forward to test their best powers in loose work, or as "general purpose ploughs;" but neither ploughmen nor horses were to be had, being used to such work. Horses, after some delay and through exertions of some of the stewards, were at length found, but with long "swing traces," not plough traces. "Where are your plough traces?" "They be Mr. ——'s, but he will lend them." Off goes the horse-keeper, and at length the traces are forthcoming, but take long finding. "But where are the swing traces?" "Oh, in the corner under the wall." These are found. "Well now, who is to plough?" "Oh, the Marquis's man." He is after a while found. Now a judge, accompanied by one or two stewards, again tries to make room for the plough to commence a furrow down the field. A space at length appears, but all are looking down a long lane of heads, so near each other that the ploughman can't see where he is to go. By great exertion made by many parties, and no little fast riding, not only up and down to form a line, but right at the folk with uplifted stick or whip—which, after all, un-English and laughable as it looked, really proved the most efficacious—the ploughman at length proceeded. On the other side of the standing wheat was a similar space, but more densely crowded, as the mowing machine was set to work cutting a field of oats. The confusion here seemed inextricable. The grubbers were all in readiness, but no room could be obtained, nor could horses be found properly harnessed to work them. Dray horses won't draw steadily at the plough or grubber. What is to be done? The judge appeals to the stewards. Instantly efforts are made. "How many horses do you require?" "Three." Two are found, one with long swing traces, the other short or plough traces; and we saw the judge industriously engaged lengthening them by rope. The grubber is attached; they move. It is mianifest two horses cannot drag it, more especially as they prefer drawing separately, and not both at once. Some little progress is made. Up rides the Marquis. "Where is Mike? he must attend to his own horses." Instantly Mike is fetched, and the ploughing stops. It is to no purpose, good as Mike is—and we know not how the trials could have gone on without him. Two more horses are procured; but as the four horses draw at four intervals, not much service is performed; however the bout is gone, and up runs an exhibitor: "My grubber is ready, and only wants two horses:" then two may go to plough. This grubber is off; but, instead of two, four horses would be much more applicable. "Pray have another grubber ready by the time we return," requests the judge. "O sure!" But neither horses nor swing-trees are at hand—both have to be sent for, and thus much time is lost. In the meantime the ploughs on the further side of the field are again off, and doing satisfactorily; the company too begins to thin, so that the furrows are not actually trodden level as the work proceeds. The mowing also ceases, and the mowing machine is taken to the clover field—a signal for many to follow. The trial of grubbers now goes on fairly, though by no means in a satisfactory manner, as the soil is only in a fit state for paring, not grubbing, and Bentall's is the only parer; but here it is grubbing, not paring. "Grubbing" in Ireland is nearly synonymous with "dragging" in England. Both trials are at length concluded, and at seven o'clock the judges are "rowled" off to the clover field some half-mile away, to try the mowing machine, which I think was one of the most satisfactory trials during the meeting.

I send you these imperfect outlines, and am desirous that our Irish brethren may profit another year by any inadvertence being pointed out that occurred in the present highly satisfactory meeting.—I am, with great respect, your obedient servant,

An English Visitor.

[We are sure our Irish friends will take this letter in the best part, considering how good the general arrangements were at Waterford, they can well afford to hear a little of what was not quite in marching order.—Ed.]

THE KEIGHLEY AGRICULTURAL SHOW.—The fifteenth annual meeting of the Keighley Agricultural Society was held on Wednesday, Sept. 2. The unfavourable weather in the early part of the day prevented the attendance of visitors, but it improved as the day wore on. The show itself was very good, the quality of the stock was excellent, and the entries were larger than they ever were before. There were 407 entries of stock, 167 of poultry, 21 of various kinds of crops, 64 specimens of implements, &c.; indeed, there were more than 700 entries. The show of sheep, especially Leicester rams, was exceedingly good. That of pigs, for the breed of which Keighley has long been famous, was said to be the best ever seen in the kingdom. There were some splendid specimens of cattle. The short-horned bull, Inkerman, the property of Mr. J. G. Sugden, of Eastwood House, was near perfection. The show of horses was not large, but there were some fine specimens. The entire horses—six in every class—were very commendable. The prizes were not large for the stock. Mr. Barratt, of Wakefield, exhibited 428 kinds of agricultural seeds, which recently obtained the gold medal at the meeting of the Yorkshire Agricultural Society at York. These obtained the high commendation of Lord Goderich, M.P. His lordship and a large number of the neighbouring gentry were on the ground. The annual dinner took place at the Devonshire Arms Hotel. Lord Goderich, M.P., presided. One interesting feature of the proceedings after dinner was the presentation of a piece of plate, weighing 18½lb., and worth £150, to Mr. J. G. Sugden, of Eastwood House, in acknowledgment of his exertions in establishing the Keighley Association, and in promoting its progress and prosperity.

HAIL-STORM INSURANCE—THE RECENT DAMAGES.

It is with deep regret that we have received most distressing accounts, from various quarters, of the destructive effects of the late thunder-storms, which have been far more extensively and severely felt than, at the time, we had any idea of. From a statement handed to us it appears that, whilst the dint of the storm fell on the counties of Hants and Berks, which bore the utmost fury of the warring elements, its ravages were felt in no ordinary degree in nine or ten of the adjoining, or even more distant districts. Letters from the counties of Bedford, Cambridge, Leicester, Lincoln, Bucks, Oxford, Essex, Gloucester, Monmouth, &c., give the same painful details of the extensive and irreparable injury done to the crops of all kinds from the masses of ice—for they can scarcely be called by the common name of hail—by which both the standing corn, and that on the swathe and in the shock, were utterly destroyed, and many of the owners ruined. Thus, a gentleman writes from Reading: "By this storm two or three farmers have been completely ruined: one poor fellow said, with tears in his eyes, that "he was beggared, for all his barley was destroyed." Another, from Basingstoke, states: "I am sorry to say I never witnessed such destruction before in my life. On Wednesday (five days after the storm) I saw 20 cart-loads of hailstones, *all whole;* and I heard several people say that over 200 loads were floated down into a corner near Lord Ashburton's park. Such a storm was never before witnessed." A third writes, from Alresford: "On the 15th I measured a drift of ice (I could not call them hail-stones) across the turnpike-road from Alresford to Basingstoke, and found it *four feet in depth.* The greatest fury of the storm was felt at Lord Ashburton's, The Grange, near Alresford." A fourth, from Cirencester, says: "There are many persons here that have lost the whole of their crops, *roots and all;* and the ice is lying about the fields now (Tuesday), although the storm took place last Friday." A gentleman from Hampshire assured us that the ice on the barley that was uncut was, in some places, four feet deep; and that a gentleman's carriage was unable to proceed on the high road, which was covered with ice to the depth of three feet. In a less, but still in a very severe degree, the effects of the storm were felt in the other counties we have named, and hundreds of farmers have suffered more or less by it, many being utterly ruined by the destruction of their crops.

Deeply as we sympathize with the sufferers by this destructive visitation of Providence, which no precautions could have averted; and fully disposed as we feel to assist in alleviating their misfortunes, we cannot help expressing our astonishment at learning that hardly any of them have had the prudence or foresight to guard against such casualties, by effecting a hail-insurance. The expense of this is so trifling, that it would not cause a moment's hesitation if incurred to purchase a temporary gratification. For a few shillings or a few pounds, per annum, according to the extent of their occupations, all might have secured themselves from loss from this calamitous occurrence, and been enabled *at all times* to lie down at night with the satisfactory reflection that, without intrenching in an appreciable degree upon either their funds or their comforts, they had secured themselves and their families against the ruin that would otherwise fall upon them in the event of such a visitation.

About a year ago we had occasion to urge this matter upon the farmers in consequence of a destructive conflagration, by which two industrious men were wholly ruined, but for whom a liberal subscription was raised, that reinstated them, as we believe, in their farm. *They* probably *now* insure; but we should like to know how many took the same course in consequence of our urgent recommendation? And what can we add to our observations at that period, that can yet induce the farmers to insure? If we tell them that it is not only ill-judging parsimony and miscalculating economy, but *positive injustice to themselves and their families*—aye, and to the public too—to systematically omit insuring, we say no more than the truth. The gamester, who risks his property on the principle that "*a blot is no blot till it is hit,*" puts up with his loss when the "hit" falls, without calling upon his friends to make it good to him. The farmer who neglects to insure is also a gambler; for, with the means in his power of securing himself from loss, he stakes his whole crop against the elements, and has no more moral right to calculate upon the assistance of friends to make good his losses than has the professed gamester. We admit that this is putting the case in a strong light; but let those who think it too strong take all the circumstances into the account, and they will be compelled to admit that our comparison is correct. For, whether the proportion of persons be great or small that suffer by a hail-storm or fire, it is equally uncertain *who* will be called to bear it; and it is positively as much calculating on the doctrine of chances in the farmer not to insure, as it is in the professed gambler to stake his last guinea on the turn-up of a card or dice.

Equally imprudent and unjust to his family is it in the farmer of small means to neglect insuring his life. The uncertainty which hangs upon the frail existence of even the healthiest of us, and the apparently trifling circumstances which frequently cut down a man in the vigour of youth, or the prime of manhood, when he has probably a tender wife and helpless family of young children, whose *all* of future prospects hang upon the continuance of his life, or the provision he has made in case of his death—for such a man, we repeat, to neglect insuring his life, when he can do it at so small an outlay, is unjust to his family, to say nothing of the satisfaction he must himself be deprived of, if death stares him in the face.

A friend of ours, a farmer, had occasion to borrow £2,000 of a banker; for which a brother-in-law, a strong, healthy man, became security. The latter urged upon the borrower to insure his life; "for," said he, "in case of my death my executors would certainly not renew the security, and the bankers would enter up judgment at once." He took his advice, and insured his brother-in-law's life; grudging however, the premium. But, mark the result. *In one month afterwards* his bondsman was killed by a fall from his horse, although one of the best and most fearless riders in the county; and, with the insurance on his life, our friend paid off the banker, and became a freed man!

With this illustration of the frailty of life and the wisdom of insurance, we shall leave the subject to the serious consideration of those for whose benefit we have written.

A NEW BREED OF SHEEP—"THE OXFORDSHIRE" DOWNS.

It is to the credit of such institutions as the Royal Agricultural Society and the Smithfield Club that their proceedings show them by no means bigoted to certain sorts or fashions, however good or popular these may be. On the contrary, they have now both, for years, been gradually striking out, and extending the area of their operations. Season after season we meet with some new class. Shorthorn, Hereford, and Devon are gradually flanked with Highlanders from Scotland, Runts from Wales, and even with Alderneys from the Channel Islands. Southdowns and Leicesters are equally well supported with Country Downs and Hampshire Downs, Cotswolds, Lincolns, and so on. It is a significant fact that under the influence of such Societies many old breeds die out, and other new ones come on. At Birmingham, for instance, the Longhorn Cattle are becoming more and more scarce, while the Shropshire Down sheep are as certainly strengthening their claim to a name and a position. How long is it since the Longhorns were well known, and the Shropshire Downs unheard of?

It is, however, the continual change of scene, so excellent a feature in the meetings of the Royal Agricultural Society, that tends above all else to foster and put the proper stamp of value on new varieties and breeds. At almost every gathering we have now special prizes arranged for the locality we visit. Many a man so gets an introduction to kinds of stock he may previously scarcely have heard of, and many a breeder the opportunity of extending a repute so far confined to friends and neighbours only. At Salisbury, for example, as we had to report,—"the special prizes were most successful, bringing a famous show of Hampshire Downs. There was a good opportunity of comparing the Hampshires with the Shropshire Downs, which were in great force amongst the other short-woolled sheep. Both are hourly increasing in repute. Indeed, since we have sanctioned so much additional size in the Southdown, it would be strange if these varieties did not command some success. It is only transplanting, after all, with a very nice cross for making a little more of them."

There is no question but these sorts are commanding some success, and very considerable success too; while, as we have just said, the Royal Agricultural Society, in its recognition of them, authenticates as it were their use and merits. Now it so happened that at this same Salisbury Meeting a gentleman from a neighbouring county heard, as needs he must, a great deal of these Hampshires and Shropshires, though he heard nothing whatever of the favourite sheep of his own district. Amongst the others they passed unhonoured and unknown. One good reason for this appeared to be that they had really no name to be known by. They had in their turn been often enough prize sheep: they had long been carefully bred, were much liked, and day by day were increasing in numbers. Still, with all this, they were as a breed anything anybody chose to call them. Let Mr. Middleton, who felt this so keenly at Salisbury, speak for himself:—"At the recent Royal Agricultural meeting at Salisbury they were entered in the catalogue not as Down Cotswolds, but as Downs and Cotswolds, and were thought but little of. It appeared to him that a breed of sheep of 20 years' standing ought to have a definite name, like the Shropshire, Hampshire, and other Downs. The very Downs were now cultivated and covered with corn, and the Down sheep were improved as well as the pastures, and he considered the name of 'Oxfordshire Downs,' would best denote the breed peculiar to this county. At the recent exhibition in France, in the present year, the Down Cotswolds were classed with the Cotswold, instead of with the short-woolled sheep; but the Down Cotswolds were patronised by the gentlemen abroad as much as they were at home. He contended that they ought to have a distinctive name for their breed of sheep, and cited the authority of the late Earl Spencer, who laid down the rule that if they continued a breed for four or five generations it was so fixed that nothing could move it if they stuck to it."

This was said at a meeting, held in Oxford, on Wednesday last, of what so far have been called "the Down Cotswold breeders." A full report of the conference appears in another part of our paper. It may be not amiss, however, to follow out the merits of the case. About twenty years since, then, curiously enough, just about the time when the Royal Agricultural Society held its first meeting, as we well remember, in this good city of Oxford, the Oxfordshire farmers began to carefully cultivate this variety of sheep. With what success it is not left merely to their own local traditions to record. The sort have long been distinguished at the meetings of our national societies. Mr. Hitchman, who followed Mr. Middleton, "had been a breeder of this class of sheep upwards of twenty years, and exhibited them at the Smithfield Show the second year when prizes were given to that class of sheep. He had taken five first prizes in succession, and had obtained nine medals and several second prizes for them; but after a few years he met greater competition. This breed of sheep had certainly made a stand in Oxfordshire; and not only here, but was spreading over the country, and had now become an extensive breed, and he was not sure whether it would not soon exceed all other classes in point of numbers. He thought they were now in a position to claim for their peculiar breed of sheep a more definite name, and he could not see why they should not have Oxfordshire Downs as well as Shropshire and Hampshire Downs, especially as the breed was of upwards of 20 years' standing, and no other class of sheep suited this locality so well; and if they went into other counties he did not see why their sheep should not retain the name of Oxfordshire Downs."

And to this it came. Every man who got up had something to offer in support of the argument. The law as laid down by Lord Spencer has been complied with. The sort has a twenty-years' pedigree to trace back to, and is now become "an extensive breed." It was so proposed, seconded, and carried accordingly, that we should henceforth have one more recognized breed of sheep—the "Oxfordshire Down," which was christened forthwith in bumpers of champagne.

There is something very satisfactory in a movement like this. It shows we are progressing as we should do—not wildly but by the safest course. We are adapting ourselves to our own circumstances, and gradually learning what best suits our own times and lands. As Mr. Middleton says, "we have improved the sheep as well as the pastures." Just as the pure Downs have increased on the flats of Cambridgeshire, or the Devons spread out on the fat lands of Somerset, have the Oxfordshire sheep been "made" to the improved condition of the soil. It will be seen that Mr. Druce is to report these proceedings to the Council of the Royal Agricultural Society. Perhaps the day may come when we shall see a class of Oxfordshire Downs. At any rate, they will now have a "habitation and a name" amongst their fellows.

ASSIMILATION OF NITROGEN BY PLANTS.

British Association, Dublin, Sept. 1st, 1857.—Section B.: "Preliminary Notice of Researches on the Assimilation of Nitrogen by Plants, by Messrs. Lawes, Gilbert, and Pugh."

The great importance of settling the question whether or not plants can assimilate the free nitrogen of which the atmosphere to such a great extent consists, was first illustrated. In a purely scientific point of view the question was of high interest, and, if answered in the affirmative, this would add a striking fact to the history both of nitrogen itself and of the vegetative functions. A true theory of many agricultural facts and practices also required a definitive solution of this debated point. The earlier writers supposed that the free nitrogen of the air could be taken up by plants. De Saussure and others came to an opposite conclusion; and this latter view had been pretty generally adopted by scientific observers: M. Boussingault in particular had adduced experimental evidence to show that plants did not assimilate the free nitrogen of the air. But, during the last few years, an extensive and elaborate series of investigations had been made by Mons. G. Ville, of Paris, the results of which led him to conclude that plants sometimes assimilated a considerable amount of free nitrogen. M. Boussingault had followed up the enquiry in various ways, and still maintained the opposite opinion. It was, hence, highly desirable that others should undertake the subject; and it was the plan of the authors to this end, and the indications so far obtained, that they now brought for discussion before the section. They described the several methods adopted by M. Boussingault and M. Ville respectively, and then illustrated by drawings their own methods and progress. In all cases their plants grew, in the first instance, in soil and atmosphere destitute of all combined nitrogen, except that contained in the seed sown. To some, however, as their growth seemed to indicate the need, for the sake of comparison, small and known quantities of ammonia were supplied. Drawings of the progress of the plants showed a very considerable increase of growth where this ammoniacal supply was given. In some of these cases the plants promised to yield seed, and their height and general development were pretty natural. In other instances, where only the combined nitrogen of the seed sown and the free nitrogen of the air were available, the plants remained exceedingly small, and withered before coming to perfection. The quantitative result could not however be known until the growing plants, the soil, and the pots in which they grew were analyzed, when the debtor and creditor account, so to speak, of the nitrogen could be made up. Collateral researches were briefly described, the object of which was to throw light on the relation of the gases evolved during the growth of plants to constituents actually assimilated; and also others, to show whether free nitrogen was a product of the decomposition of organic matters under certain circumstances. A discussion followed, in which the President and Professor Daubeny took part. The latter gentleman expressed his satisfaction that the question of the assimilation of free nitrogen by plants was now taken up, and was being investigated on such a considerable scale, at Mr. Lawes's laboratory; for he had read with some surprise the apparent sanction given by a Commission of the Academy of Sciences of France to the opinions of M. Ville, which so many scientific considerations would lead us to hesitate in adopting. After further remarks from Dr. Gilbert, Dr. Pugh entered into some fuller explanations illustrating the methods adopted, and the difficulties and sources of error to be overcome or avoided.

DAIRY MANAGEMENT.

BY THOMAS HORSFALL.

[FROM THE "JOURNAL OF THE ROYAL AGRICULTURAL SOCIETY."]

On resuming my observations for the Society's Journal on the treatment of dairy cows, I cannot properly omit to explain circumstances which appear in some degree to have influenced the results during the present season.

Towards the close of July, 1856, and during the warm weather of August, my cows whilst in pasture by day and housed during the night, were attacked by that unwelcome visitor the pleuro-pneumonia, which affected the majority of them, and continued with little intermission to the close of December. Though by treatment which I purpose to describe, nearly all have been restored, yet it is not without more or less damage to the lung—or organ essential to the due performance of every function of the animal, and exercising especial influence on the respiratory process, and the carbonaceous or fatty products.

In the course of my experience I have ascertained that cattle, whose lungs have been damaged by a previous attack of pleuro or other cause, are deficient in their store of loose fat, in comparison with what their touch, appearance, and the length of time they have been feeding, would lead one to expect. To the same cause I am disposed to attribute the somewhat lessened proportion of butter to milk and to cream, during the present, compared with what I have observed during several other seasons from similar treatment.* The proportions have been, from each quart of cream, 20 oz. of butter; and from 16 quarts of milk, 20 oz. of butter. On testing the quality of the milk by a lactometer, I find the proportion of cream less from those which have suffered from pleuro than those which have remained healthy: in one or two instances the difference is marked. In the quantity or yield of milk after recovery, I find little if any difference beyond what might have been expected from the lapse of time during illness.

On the 23rd of March the following results appeared:—

	Quarts.		Oz.
Old milk	340	making of butter	402
Cream churned..	20		
Cream used	3	would have made	60
			462

or—

20 oz. of butter from 1 quart of cream.
20⅓ oz. of butter from 16 quarts of milk.

This test was made purposely when the temperature of the dairy ranged at 54 deg. to 56 deg. from the time the milk was set up, without the appliance of hot-water, described in a former Journal. The consistency of the cream was such, that on filling a cup, a spoon dipped into it stood erect, the cream being quite sweet.

The most correct way of ascertaining the quantity of thick cream, is to observe the height it reaches in the jar, and then measure the water required to fill the jar to the same height.

In May, with a considerable change of cows, the results were—

23½ oz. of butter from 1 quart of cream.
22 6-10ths oz. of butter from 16 quarts of milk.

During the continuance of the disease I was prevented instituting comparisons on the effects of different food: my weighings were likewise discontinued, with the exception of one made on the 8th of October, when the cows were confined wholly to their stalls.

COMPARISON OF DIFFERENT METHODS OF FEEDING DAIRY COWS.

Being desirous of comparing the result of my method of feeding dairy cows with the system usually practised in this locality, it occurred to me that as my cows had been accustomed to savoury steamed food, a change to ordinary food would be attended with less favourable results than if they had been previously treated in the common mode; and that under these circumstances it would be better to institute comparisons with two near neighbours, Mr. Smith and Mr. Pawson, whose practice and results I had the opportunity of inspecting.

Mr. Smith's cow was of rather small frame, but noted for her usefulness as a good milker. At the time of calving her third calf, about the 12th of November, she was in good condition, and gave soon after 17 quarts of milk per day. Her owner states that in the first three weeks (up to the time this comparison was begun) her condition sensibly diminished—a result which I apprehend will be invariable with cows giving this quantity of milk when fed on meadow hay only, with which Mr. Smith's cow was supplied *ad libitum*, and of which she consumed 28 lbs. per day. Mr. Pawson's was a nice heifer, three years old at the time of calving her first calf, October 6th, in more than ordinary condition, and gave about 16 quarts per day. Her owner states, that on the 1st of January her condition was much diminished; this is corroborated by Mr. Myers, a dealer in the village, who tells me, that previous to her calving, he was desirous of purchasing her, and would have given from £17 10s. to £18, and describes her as being at that time full of beef. Her weight on the 1st of January, 7 cwt. 2 qrs., bespeaks her condition as much lowered.

During the month of October and till late in November, she was turned out in the daytime to graze on aftermath and housed during the night, where she was supplied with turnips. From the close of November till the first week in February her food consisted of—

Meadow-hay of inferior quality	18 lbs.	per day.
Swede turnips	45	„
Ground oats	9	„

After this the ground oats were discontinued and meadow hay of good quality was given *ad libitum*, with 45lbs. of turnips.

For comparison I selected a cow of my own, which calved about the 8th of October, and gave soon after 18 quarts of milk per day; she was also of small size. At the time of calving her condition was somewhat higher than that of Mr. Smith's. When the experiment was begun, on the 1st of January, no perceivable difference was found in the yield of milk of Mr. Smith's cow and my own, each giving 15½ quarts per day.

The following table gives the dates of calving of the three cows, together with their weights and yield of milk at the commencement and termination of the experiment:

When Calved.	Yield at Calving.	January 1.				March 5.			
		Weight.			Yield.	Weight.			Yield.
	Quarts	Cwt.	qrs.	lbs.	Quarts	Cwt.	qrs.	lbs.	Quarts
Mr. Smith's — Nov. 12......	17	8	3	0	15½	8	0	0	9½
Mr. Pawson's— Oct. 6	16	7	2	0	12	7	1	0	6¼
My own, Oct. 8	18	9	3	0	15½	10	1	0	12½

Mr. Smith's cow lost in weight in nine weeks 84lbs., being 9⅓lbs. per week, with an average yield of 12½ quarts per day: Mr. Pawson's lost 28lbs.: this loss, together with the diminished yield of milk, occurred almost wholly after the oats had been withdrawn. Her weight on the 6th of February being still 7 cwt. 2 qrs., and her yield of milk 11 quarts per day.

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* The proportion of butter to milk and cream in the winter of 1854-55 was shown in my last paper (Journal, vol. xvii. p. 358) to have been—

25 oz. of butter from 16 quarts of milk.
25 oz. of butter from 1 quart of cream.

My cow has gained, in the nine weeks, 56lbs., being 6¼lbs. per week, with an average yield of 14 quarts, the diminution being regular. January 1st, 15½; February 4th, 14; March 4th, 12½; making an average yield of 14 quarts per day. The whole loss and gain of weight will be in flesh and fat, the cows having kept up their consumption of food and their bulk.

The weekly account of profit and loss will stand as follows:

	s.	d.
Mr. Smith's cow, average yield for 9 weeks, 12½ quarts per day, at 2d. per quart	14	7
Deduct loss in flesh 9⅓lbs., at 6d.	4	8
	9	11
Cost of 14 stones hay, at 6d. per stone	7	0
Profit	2	11
Mr. Pawson's cow, average during the first five weeks, 11½ quarts per day, at 2d. per quart ..	13	5
Cost of 9 stones inferior hay (at 4d. per stone), per week .. .. 3s. 0d. Cost 63lb. ground oats, 4s. 8d; turnips, 1s. 6d. 6s. 2d.	9	2
Profit	4	3
My cow, average yield for 9 weeks, 14 quarts per day, at 2d. per quart	16	4
Gain of flesh, 6¼lbs. per week, at 6d.	3	1½
	19	5½
Cost of food: Hay, 63lbs., at 6d. per stone; straw and shells of oats, 1s. 3d.; mangel, 1s. .. 4s. 6½d. Rape-cake, 35lbs.; bran, 10½lbs.; malt-combs, 10½lbs.; bean-meal, 10½lbs .. 4s. 0½d.	8	7
Profit	10	10½

The richer quality of the manure will probably compensate for the extra labour, cooking, and attention bestowed upon my cow.

With a view of extending the comparison I give particulars of the whole of my cows, the weights of which were registered on the 8th of October, and which were still on hand, free from calf, and in a state admitting of comparison. These were bought at a neighbouring market in but moderate condition: indeed with my mode of feeding I do not attach the same importance to high condition as a town-side farmer would. A cow in full condition attains her maximum yield in a week or so after calving, whilst those in lower condition continue, by my treatment, to increase their quantity up to about a month after calving.

The dates of calving are not precisely those on which the cows calved, but on which they were purchased as new calven cows. The prices named are those paid for the cows without their calves, except in one instance, the cow No. 1 being bought a few days before calving. They are what may be termed young cows, having had two or three calves each. The prices will disclose to those conversant with the subject, that the animals were not in high condition nor of high breed.

No.	When Calved.	Price.		Greatest Yield per Day.	October 8. Weight.			February 4.				March 4.				Computed average per Day during			Gain. Oct. 8 to Feb. 4.	Gain in Weight per Week.
								Weight.			Yield per Day	Weight.			Yield per Day					
		£	s.	Quarts.	Cwt.	qrs.	lbs.	Cwt.	qrs.	lbs.	Quarts.	Cwt.	qrs.	lbs.	Quarts.	Weeks.		Qrts.	lbs.	lbs.
1	July 28	14	9	12	9	2	0	10	0	0	8	10	1	0	8	29	=	10	84	4
2	Aug. 25	15	14	18	10	0	0	11	1	0	14	11	1	0	14	27	=	16	140	6¾
4	July 28	15	9	18	8	2	0	10	1	0	15	10	0	0	15	31	=	15	168	8
6	Sept. 8	16	15	16	10	2	0	10	2	0	14	10	3	0	14	25	=	15	28	1⅓
7	Sept. 8	17	9	16	10	2	0	11	0	0	10	11	0	0	10	25	=	13	56	2⅔
11	Aug. 25	15	9	16	9	1	0	9	2	0	11	9	2	0	11	27	=	13½	28	1⅓
	Average ..			16	..			..			12	..			12	27⅓	=	14		

My cows, during the period under consideration, were treated as follows: During August and September they were on open pasture by day, and housed by night; evening and morning they were supplied with mown grass, and two feeds of steamed mixture. Towards the close of September, green rape was substituted for the mown grass, with the same allowance of steamed mixture: from the 8th of October, when they were wholly housed, they were supplied with steamed food *ad libitum* three times per day. After each meal, 10 to 12lbs. of green rape-plant were given; and 9lbs. hay per day, till November: from that time, steamed food, with cabbages or kohl-rabi, till the early part of February, when mangel-wurzel was substituted. It will be observed that I give hay and roots in limited quantities, and the steamed food *ad libitum*. I prefer this to apportioning the cake and other concentrated food in equal quantities to each, as this steamed mixture contains more of the elements essential to milk; and each cow is thus at liberty to satisfy her requirements with it. Nos. 2 and 4, which have given the greatest quantity of milk, have eaten more than their share; whilst No. 1, which has given the least milk, has scarcely eaten more than half the quantity of steamed mixture consumed by 2 or 4. The yield of milk and the live weights, on the 4th of February and the 4th of March, scarcely vary. During February, 34lbs. of mangel were substituted for kohl-rabi. With this change, the cows became more relaxed. My experience in weighing, extending over several years, has shown me that when animals, from change of food, become more relaxed or more costive, their weighings in the former state denote less, whilst in the latter they denote more, than their actual gain in condition. I have known instances in which a month's weighing, accompanied by some relaxation, has shown no gain; whilst in the following month, with restored consistency, the gain has doubled.

The results I have described are wholly over periods commencing from the time of calving, and during the first stages of milk, the longest extending over thirty-one weeks, when the production of milk is at the largest.

No. 4 suffered from pleuro in September, from which time her yield of milk fell off to less than two quarts per day. Nos. 6 and 7 suffered also, and No. 11 considerably, after their weighing, Oct. 8th: each of them regained their yield of milk after recovery. It will be clear that their weights would have been greater, had they continued in health throughout. In stating their produce of milk and food, I treat them as if they had remained in health.

I now proceed to examine the materials of food, their composition, and the probable changes they undergo in the animal economy:

QUANTITY and DESCRIPTION of FOOD supplied to Six Cows during 27⅓ Weeks, and its Composition in proximate Elements and Minerals.

	Per Day.	Total Weight of Food given.	Cost per Ton.	Total Cost.	Weight of Food when dried.	Albumen.	Starch.	Oil.	Fibre.	Minerals.
	lbs.	lbs.	£ s. d.	£ s. d.	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Meadow hay	56	10,715	4 0 0	19 2 9	9,420	990	4,257	287	2,933	953
Rapecake ..	30	5,740	6 10 0	16 12 0	5,456	1,803	2,177	611	494	171
Malt-combs .	9	1,722	5 9 0	4 3 0	1,660	411	791	51	320	88
Bran	9	1,722	6 10 0	5 0 0	1,500	246	800	96	258	100
Beans	9	1,722	9 6 8	7 3 6	1,500	464	774	34	176	53
Green food ..	204	39,032	0 10 0	8 14 6	5,740	862	3,074	115	1,148	541
Oat-straw* ..	50	9,566	1 15 0	7 9 0	8,407	287	3,066	100	4,526	428
Bean-straw..	12	2,296	1 15 0	7 16 0	1,964	376	725	51	594	217
Total ..	379	72,515		70 0 9	35,647	5,439 = Nitrogen 888lbs.	15,664	1,345	10,449	2,551

* The cost of shells of oats, of which I use an equal quantity, is 16s. per ton.

Production of milk by 6 cows—average 14 quarts per day each, for 27⅓ weeks, = 16,072 quarts, which, at 41 oz. per quart, = 41,184lbs.

	lbs.
When dry or free from moisture	5,230
Butter in 16,072 quarts, at 30 per 1,000........	1,235
Casein „ 48·2 „	1,977
Sugar of milk	1,804
Minerals { Phosphate of lime .... 99 Other .... 115 }	214
	5,230

Gain of weight, 500lbs., of which I compute .... 300lbs. as fat. 200lbs. as flesh.

	500
Nitrogen	316lbs.
Phosphate of lime	99
Phosphoric acid	45·50

	s. d.
Cost of food per cow per week........	8s. 6½d.*
Gross return in milk..............	16s. 4d.
„ weight...........	1 6
„ manure...........	2 8
	20 6

ANALYSIS OF MILK, BY HAIDLEN.

Water	873·
Butter.....................	30·
Casein......................	48·2
Milk sugar..................	43·9
Phosphate of lime...........	2·31
Magnesia	·42
Iron	·07
Chloride of potassium	1·44
Sodium and soda	·66
	1000·00

Manure, 88lbs. per cow per day.
For 6 cows per day, 528lbs., = 3,696lbs. per week.
„ for 27⅓ weeks, 101,028lbs., containing:

Of nitrogen	414lbs.
phosphoric acid	393
potash	585

Nitrogen incorporated in food		888lbs.
Casein..............	316·	
Fibrin..............	7·35	
Manure	414·	
Balance consumed in perspiration ..	150·65	
	888·00lbs.	

The materials of food are shown to have cost..		£70 0s. 9d.
Gross value, 16,072 quarts of milk, at 2d. per qt.		£133 18 8
Gain of weight, 500lbs., at 6d. per lb.........		12 10 0
	£ s. d.	
Nitrogen in manure, 414lbs., = Ammonia, 494lbs., at 6d.......	12 7 0	
Phosphoric acid, 393lbs., at 1½d. per lb....................	2 9 1	
Potash, 585lbs., at 3d. per lb.	7 6 3	
		22 2 4
		£168 11 0

Manure per cow per day, 88lbs.; per week, 616lbs., containing:

	s. d.
Ammonia, 3lbs.	1 6
Phosphoric acid, 2·40lbs............	0 3½
Potash, 3·57lbs.	0 10½
Value of a cow's excrement, per week..	2 8

ANALYSIS OF EXCREMENT, BY PROFESSOR WAY

	Per Cent.
Moisture................	84·85
Phosphoric acid	·39
Potash	·58
Soda..........................	·22
Other substances.................	13·96
	100·

Nitrogen ·41, = ammonia ·49.

The analyses of the chief ingredients of my own produce, or such extra materials as I usually purchase, have been made by Professor Way; for other materials I have had recourse to a very useful compilation by Mr. Hemming (vol. xiii., p. 449, of the Society's Journal,) and to Morton's "Cyclopædia of Agriculture." The analysis of straw is that of oat-straw; that of green food is derived from the analysis of rape-plant, cabbages, and kohl rabi. During February and March I have been using wheat and barley-straw with mangel, and as these materials contain less oil, I give in the steamed food three ounces of linseed oil per day to each animal. For the composition of milk I adopt that by Haidlen, whose method of analysis is reputed to be the most accurate, the proportion of butter in my milk being this season very similar to that given by him.

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* When the yield of milk is less, the cost of food is reduced to 7s. 8d. per week.

It will be observed that this is the gross return for 27⅓ weeks from the time of calving, from which will have to be deducted expense of attendance, &c.

	£.	s.	d.
The materials used as food are found to have cost	70	0	9
The value of these materials as manure consists of 888 lbs. nitrogen = 1,061 lbs. ammonia at 6d.	26	10	6
Phosphoric acid and potash	9	15	4
Value of food if employed as manure ..	36	5	10
The 16,072 quarts of milk, at 2d. per quart for new milk, at which price it enters largely into consumption as food for man, amount to......	133	18	8

	£.	s.	d.	
The nitrogen in the milk 316 lbs. = ammonia 378 lbs., at 6d. per lb....	9	9	0	
Phosphoric acid in ditto 45½ lbs. at 1½d. per lb.	0	5	8	
				£9 14 8

From these statements it will be seen that materials used as *food for cattle* represent double the value they would do if used for manure, whilst that portion converted into *food fitted for the use of man* represents a value thirteen to fourteen times greater than it would as manure.

It then appears clear that it is for the feeder's profit to use his produce as much as possible as food for cattle, with the view to convert it with the utmost economy into food for man, and *thus increase rather than enrich his manure-heap.*

The calculation of casein in milk is based upon the supposition that my milk is equal in its proportion of that element to that analysed by Haidlen. Several analyses by other chemists show a less per-centage, 4 to 4.50. As my cows are adequately supplied with albuminous matter, I have a right to presume on their milk being rich in casein.

The loss of nitrogen by perspiration, 150.65 lbs., is nearly 17 per cent. Boussingault found a loss of 13.50 of nitrogen in a cow giving milk.

The abstraction of nitrogen in the milk is computed at 316 lbs., value	£9	9	0
The abstraction of phosphoric acid in the milk is computed at 48½ lbs.	0	5	8

Either the rape-cake or bran alone suffices for the restoration of the phosphoric acid.

The amount of phosphoric acid in the manure is 393 lbs., being about 16 per cent. of the whole ash or mineral matter. The ash of meadow-hay contains about 14 per cent.; that of rape-cake, 30 per cent.; bran, 50 per cent.; malt-combs, 25 per cent.; turnips, &c., 10 per cent. of phosphoric acid.

The amount of potash in the excrement is 616 lbs., being about 25 per cent. of the whole ash or mineral matter. The ash of meadow-hay contains about 20 per cent.; rape-cake, 21 per cent.; malt-combs, 37 per cent.; turnips (various), 44 per cent.; from which it may be inferred that the sample of excrement sent to Professor Way for analysis did not contain more than a fair proportion of these ingredients.

To ascertain the quantity of excrement, the contents of the tanks into which the cows had dropped their solid and liquid excrement during five weeks were weighed, and found to be 500 cwt. 2 qrs. 0 lbs. from 18 cows, being 88 lbs. per cow per day. The sample for analysis was taken from that which the cows had deposited within the preceding 24 hours. This was collected in the mud-cart, well blended, and sent off quite fresh.

It is sufficiently proved, by the experience of this district, that 20 lbs. of meadow-hay suffice for the maintenance of a cow of fair size in store condition: a like result is stated to be obtained from 120 lbs. of turnips per day. The six cows will have then required during the 27⅓ weeks for their maintenance only—

Per Day.	Weeks.	Total Weight		Albuminous Matter.	Oil.	Starch, &c.
lbs.		lbs.				
120 of Hay, or for....	27⅓	22960	Containing of—	2127	616	9130
720 of Turnips, or for..	27⅓	137760		2295	306	9100

They will further have required adequate food—

	Albuminous Matter, Fibrin, & Casein.	Oil and Butter.	Starch & Sugar of Milk.
For the production of.........	2116	1235	1894
Add for Maintenance by Turnips.	2295	306	9100
	4411	1541	10994
The food supplied is computed to have contained	5459	1345	15664

I omit the minerals, which are observed to be in excess of the requirements.

For the maintenance of a fair-sized cow for one day, in a normal state, the following elements seem adequate:—

	Albumen.	Oil.	Starch, &c.	Lime.	Mineral Indients. Phosphoric Acid.
In 20 lbs. of Hay ..	1.85	.536	7.95	.90	1.11
In 120 lbs. of Turnips.	1.98	.26	7.82	.97	1.9

When cows are in milk, there occurs a much greater activity of the functions; they eat and drink more, evacuate more excrement, and, in all probability, spend considerably more food in respiration. Whilst the 17.60 lbs. per day dry matter in 20 lbs. of hay are found adequate for the maintenance of a cow in a store state, the six cows in milk have eaten on the average 21.37 lbs. solid matter per day during the 27⅓ weeks. When I have fattened cattle together with a number of milk cows of similar size, which gave on an average 8 quarts of milk per day, the whole being fed with moist steamed food, and receiving the same allowance of green food, I have found the fattening cattle refuse water, whilst the milk cows on the average drank upwards of 40 lbs. per day of water given separately: the 8 quarts of milk contain only about 17.58 lbs. of water; still in several analyses of excrement I have noticed little difference in the per-centage of moisture in that from the fattening animals as compared with that from cows giving milk.

These facts would seem to show that upwards of 20 lbs. more water were given off from the lungs and pores of the skin of a milking than of a fattening animal.

The excrement of the six milk cows, 88 lbs. per day on the average, is found to contain of nitrogen .36, equal to that in 2.25 lbs of albumen; whilst 1.85 of albumen in the 20 lbs. of hay is found adequate for maintenance.

On comparing the supply of the food to the six milk cows with their requirements and production, there seems an excess in the albuminous matter, a deficiency in the oil for the fat and butter, an excess in the starch, &c. Taking, however, the increased activity of the animal functions and consequent consumption of food by the milk cow, I am not encouraged to lower my standard of food. That it has sufficed, is abundantly proved, as each of the six cows under observation has gained in condition during 27⅓ weeks.

My observations on nutrition tend to the conclusion, that if you supply animals with starch, sugar, &c., to satisfy their requirements for respiration, you enable them to convert the oil of their food into butter or fat to such extent as their particular organism is fitted for effecting it.

In the treatment of the six cows it will be seen that the oil in the food is inadequate for the supply of the butter and of the fat, some portion of which will have been derived from the starch, sugar, &c. Of the efficacy and adaptation of these for the production of fat, I propose to explain my views by drawing a comparison as to the production of food adapted for the use of man in the form of beef and of milk, on which I find in recent and deservedly popular works what appear vague and extravagant statements.*

On entering upon this comparison it is necessary that I should explain my conclusions on a subject to which, as far as my reading and information extend, little inquiry or attention has been given, viz., the whole gain of weight and the proportions of useful material and offal made by the cattle whilst fattening.

Weight of meat gained by fattening cattle.—Not being a breeder of horned stock, I purchase my milk cows and cattle for fattening in the markets of the neighbourhood. I prefer, for fattening, full-grown cows, which have had one, or, at the most, two calves, at from three to five years old. The breeds of this district are mixed short-horns, the bulls used having a large admixture of short-horn blood. The live weight of the cattle I buy for fattening is from 7 cwt. to 9 cwt. each. Their capability of carrying additional weight may be taken at 3 cwt.; so that when prime fat they will weigh from 10 to 12 cwt. Their dead or carcase weight, if killed in a lean state, will be less than one-half their live weight, varying probably from 43 to 46 per cent. In Morton's "Cyclopædia," article on meat, the comparison of carcase and live weight is stated as 50 per cent. when half-fat, of cattle of like quality. This tends to confirm my estimate of the proportion of live to dead weight of lean stock.

I will consider for example a lean animal weighing 8 cwt., and capable of weighing, when prime fat, 11 cwt. live weight; when fairly started, and with proper feeding, I should look for an average gain of 14 lbs. per week live weight. At this rate it would require 24 weeks to bring it to a state of prime fatness, and the comparison of live and dead weight when lean and fat would stand as follows:—

Lean	Live weight = 8 cwt.	
	Dead weight, at 45 per cent. = ...	28¾ stone
Fat	Live weight = 11 cwt.	
	Dead weight, at 60 per cent. = ...	52¾ „
	Gain in dead weight in 24 weeks	24 „

or 14 lbs. per week, being precisely the average gain in live weight.

In the course of feeding there is a gradual increase of interior fat of two descriptions—fat in the loins, which is weighed with the carcase, and loose fat or tallow which counts as offal. Even though this loose fat counts as offal, it is well-known that cattle well-stored with this weigh heavier in proportion when killed than those with less, and which are in lower condition. A consideration of this has led me to infer, that with the increase of this interior fat there occurs a displacement of material in process of digestion; and on inquiry of butchers of experience, I learn that one characteristic of a beast which kills well, is to have a little stomach. On looking over the items of offal of full-grown animals, they appear capable of little variation in the same animal, except the loose fat and the stomach, in each of which there occurs a difference of 100 lbs. or upwards.

The writer of the article on Meat, in Morton's "Cyclopædia," attributes this greater carcase weight of fatted beasts to greater solidity: to hollows being filled up and protuberances being formed. It seems, however, clear that this would equally affect the live weight, and does not therefore satisfactorily explain the matter just mentioned.

If these views be correct, it appears that besides a gain of carcase weight, which is shown to be 14 lbs. per week, on animals which gain this in live weight, there is likewise a gain of loose fat, which, from observation, I am led to estimate at 3 lbs. per week, or 72 lbs. for the 24 weeks. An animal in a lean or store state will contain about 30 to 35 lbs. of loose fat. After 24 week's feeding, I should expect 104 to 112 lbs. of loose fat.

The gain in carcase weight I estimate as 14lbs. per week.
„ in loose fat .. .. 3 „

Whole grain per week .. .. 17lbs.

I may here remark, that if the feeder expect a weekly return equal to the price of the whole of the gain in live weight, he is likely to be mistaken. Though favourably situated for the purchase of stock, I am seldom able to purchase lean stock, which, if killed at the time of purchase, would not, in accordance with the computation stated, cost more per lb. than the price of fat stock at the same time. The difference in my case will be from 30s. to 40s. per beast, which will be a deduction of 1s. 6d. to 2s. per week from the earnings reckoned on the gain of live weight.

In addition to the interior fat, tallow, and suet, there is an increase in the fat of the beef, and of that mixed with the flesh. That this increases in a greater proportion than the flesh seems clear, as fat beef is a term used to signify beef having a greater proportion of fat to flesh. I am therefore disposed to estimate the gain per week as composed of

Loose fat or tallow, per week	3 lbs.
Fat with beef and suet in the loin	8
Fibrine or flesh	6
Total gain per week	17

As flesh contains 77 per cent. moisture, the weekly gain for each in dry material will be—

Fat	11 lbs.
Dry fibre	1·38
	12·38

Extending this over 27⅓ weeks, six cows would have gained in fattening—

Fat	1802 lbs.
Dry flesh	226
	2028

The gain by milk cows has been, during 27⅓ weeks

In butter	1235 lbs.	
In sugar	1894	
In fat	300	
Gain in respiratory elements		3429 lbs.
In casein	2100	
In fibrine	46	2146
Salts or mineral matters		240
		5815

The whole computed gain in solid food by milk-cows is nearly three-fold, whilst that of casein is nearly *ten-fold* the amount of dry fibrine gained in fattening.

There is besides a consideration affecting the two processes: by that of milking there is a continuous drain on the albumen of the food by the production of casein, whilst by fattening the tendency is to repletion of the fibrine. When this has acquired its full development, the requirements of albumen in the food will be limited to what is necessary for the maintenance of the flesh.

Excrements of Fattening Cattle.—With the object of informing myself, and for the better understanding of my practice, I had recourse to the following experiments during the years 1852 and 1853. Eight fair-sized fattening cattle were supplied daily with

18lbs. oat straw, shells of oats, and bean-straw.
4 „ rape-cake and bean-meal,

22

with which they drank about 70lbs. of water each. The yield from this in solid and liquid excrement was found to be, for every 100lbs. fodder and water, 72½lbs. excrement, being about 10 tons per animal during the year. I give the analysis of the excrement by Professor Way:—

Moisture	81·77 lbs.
Organic matter, sand, and silica	15·51
Phosphate of lime	·65
Other substances	2·7
	100·00

Nitrogen ·45 = ammonia ·54 per cent.

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* Professor Johnston, in his "Agricultural Chemistry," (p. 406) quotes (though with hesitation) Sir John Sinclair and M. Riedesel the former of whom states that the same weight of herbage which will produce less than 30 lbs. of dry human food in the form of beef will yield 500 lbs. in the form of milk; and the latter says that the same quantity of hay will produce either 100 lbs. of beef or 1,000 lbs. of milk.

The next cattle under experiment were eight heifers which had scarcely attained their full growth. After allowing a short time for change of food, they gained evenly and steadily throughout sixteen weeks, during which their weight increased from 7¾ to 9¾ cwt. each (on the average), being 14lbs. per week. They were supplied with turnips or other green food at the rate of 60lbs. per day—with chopped straw, together with 4lbs. rape-cake and 2lbs. of bean-meal each per day for ten weeks; from this time, during six weeks, to the conclusion of the experiment, 3lbs. each per day of rape-cake in addition, making 7lbs. rape cake and 2lbs. bean-meal per day for each. I supply the amount and description of food for 21 days, during which the 7lbs. of rape and 2lbs. of bean-meal per day to each were given:—

	Weight of Food.	Composition of Food.		
		Water.	Organic.	Mineral.
	lbs.			
Rape cake	1176·	99·84	1042·	34·10
Bean meal	336·	48·50	278·75	8·75
Shells of oats	1260·	dried	1162·	98·
Swede turnips......	10080·	8907.	1100·	73·
Hay of inferior quality	1176·	165·25	949.50	61·25
Water	846·	846.	..	..
	14874·	10066·59	4532·25	275·10
Excrement	9600·	8152·	1163·50	284·25
Deficiency*	5274·	1914·59	3368·75	plus 9·15

Nitrogen in Rape cake......................	59·04
" Beans	16·75
" Shells of oats	8·
" Turnips	28·
" Hay..........................	12·
	123·79
	lbs.
In 9,600lbs. excrement.............. Nitrogen	75·84
In 169lbs. flesh dry fibrine, 38·87 = Nitrogen	6·24
	82· 8
Nitrogen spent in perspiration ..	41·71
	123·79

The gain in weight during these 21 days was 338lbs., or 14lbs. each per week. The proportion of flesh is assumed to be 169lbs., or one-half the gain of weight, and seems ample, though the cattle were still growing.

The analysis of the excrement by Professor Way, gives of

Moisture	84·92
Organic matter, with salts of ammonia	12·12
Sand....................................	·93
Phosphate of lime	·72
Alkalies, sulphates, &c.	1·31
	100·00

Nitrogen ·79 = ammonia ·96.

Barrall states the proportion of the nitrogen which escapes by perspiration as one-third or one-fourth of that in the food. Boussingault found that in a cow giving milk there was an escape of 13·50 per cent. of the nitrogen, whilst a turtle dove parts with 35·04 per cent. of this element. This loss of nitrogen seems hitherto to have been little noticed by practical feeders. It seems possible that this loss may be increased by too liberal a supply of albuminous matter in the food.

The next experiment was on eight cattle, and commenced March, 1855: the first six weeks after they were tied up, their food consisted of chopped straw, shells of oats, and bean-straw, in about equal proportions; 4lbs. of rape-cake, 1lb. bean-meal, ½lb. linseed, and ½lb. wheat ground together, and 30lbs. swedes per day. The straw, &c., were cooked by steaming. On this food two of the heifers had gained 9lbs. each in the month's weighing, the others 16lbs. and 18lbs. each per week; the average being somewhat more than 14lbs. per week. A sample of the excrement was sent on the 26th of March to Professor Way for analysis, which gives of

	lbs.
Moisture	83·81
Organic matter..........................	13·44
Sand, &c.	·93
Phosphate of lime	·64
Common salt	·18
Sulphate of soda and potash	·95
	99·95

Nitrogen ·51 = ammonia ·62.

The yield of excrement is at the rate of about 9½ tons per year; value, 8s. 6d. per ton; or 1s. 7d. per week for each.

My store of turnips being exhausted with March, an additional proportion of bean-straw, with the above-mentioned allowance of rape-cake, bean-meal, linseed, and wheat ground together, was supplied till the 24th of May, when a portion of meadow-grass was mixed with the straw, and by degrees the straw was discontinued; when mown grass, together with the same allowance of extra food, was given till the close of June, when the lot were of prime quality, and sold for the top market price. Up to the close of May their gain averaged over 14lbs. per week; during June they gained something less than 14lbs. per week. On the 29th of June a sample of excrement was sent to Professor Way, who reported its contents of

	lbs.
Moisture	84·90
Organic matter..........................	11·94
Sand	·86
Phosphate of lime	1·33
Common salt	·24
Sulphate of soda and potash	·76
	100·00

Nitrogen ·94 = ammonia 1·14.

The yield of excrement was at the rate of 9½ tons per year, and its value in ammonia and phosphate of lime may be computed at 15s. per ton, being at the rate of 2s. 10½d. per week for each, to which the sulphate of potash will be an appreciable addition.

It will be observed that the bulk of food supplied when this sample of excrement was sent for analysis was meadow-grass, at the time of year when it is rich in nitrogen, and this would materially affect the proportion of nitrogen in the excrement. It would have afforded a more correct test of my views as to the disposition of animals to assimilate more of nitrogen in the early, and of fat in the later, stages of feeding if the same food had been continued throughout. Still when I find in the advanced stage of feeding the excrement doubly rich in nitrogen, with scarcely an equal gain in weight, this tends to confirm such an inference.

It seems probable that the supply of extra food, during June, as far as regards the nitrogenous principle, was superfluous. The cost of this extra food is 3s. 2½d. per week; the increase in the value of the excrement will be about 1s. 7d., as the excrement without the extra food would probably have been worth 1s. 6d. per week.

On each occasion the sample of excrement sent for analysis was taken from the quantity of solid and liquid evacuated during the preceding 24 hours, well blended and sent off quite fresh.

These experiments were concluded in June, 1855, since when my treatment has undergone some modifications.

Efficacy of Sugar and Starch in the production of Fat.—I now call attention to a subject which has been long a matter of controversy amongst the teachers of agricultural chemistry, and which may be considered as barely settled—the efficacy of sugar and starch in the production of fat. In the Highland Agricultural Society's Journal I find well-authenticated and reliable statements by Mr. Hope of Fenton Barns and others, to the effect that cattle supplied with turnips—170 lbs. to 180 lbs. per day, with 5 lbs. of straw per day—had gained throughout a course of feeding 14 lbs. per week—a gain I scarcely found exceeded, taking the average of a lot for a lengthened course. From various analyses of these materials, and selecting those of good average quality, I deduce the following proportions in lbs. for 24 weeks:—

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* Chiefly consumed in respiration and perspiration, the remainder being converted into flesh, fat, &c.

	Per Day.		In 24 Weeks.			
	Natural State.	Dry.	Whole Weight, Dry.	Compesition.		
				Albuminous Matter.	Oil.	Starch, &c.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
Turnips	175	19·25	3234	485·10	64·68	1940
Straw	5	4·40	1056	31·50	7·	420
	180	23·65	4290	516·60	71·68	2360
As requisite for maintenance only, without gain	120	13·20	2217	332·55	..	1440·80
The remainder for increase				184. 5	71·68	919·20

	lbs.
I assume * the oil or fat of 120 lbs. of turnips per day (or for 24 weeks, 44·34 lbs.) to be required for maintenance, and compute it as equal to starch, in proportion of 2 lbs. of oil to 5 lbs. of starch and sugar, or 44·34 lbs. .. .. =	110·88
Starch and sugar in 120 lbs. of turnips per day for 24 weeks	1330·12
	1441·

It will be observed that the 184·5 of albuminous matter is greatly in excess of what is required for assimulation or increase of flesh. This supply of albumen represents 7·66 lbs. of dry fibrine per week, which with the usual proportion of moisture, 77 per cent., is equal to a gain per week of 33·30 lbs. of flesh, whilst my computation of gain per week in flesh is only 6 lbs. It then follows that the manure or excrement from cattle whilst fattening on turnips only will be richer in nitrogen than when supplied only with the quantity required for their maintenance.

Professor Way, in the Royal Agricultural Society's Journal, vol. iv. p. 181, gives the analyses of twenty-two kinds of grasses in the dry state, comprising most of those which prevail on our feeding pastures, from which he derives an average of—

Albuminous Matter.	Oil and Fat.	Starch, Sugar, &c.
10·98	3·08	45·57

These analyses were made on grasses chiefly when in flower. Every grazier of experience will agree in saying that grass in a younger state will fatten more satisfactorily. This younger grass will differ chiefly in its less proportion of woody fibre, which, in the grasses analyzed by Professor Way, averaged 35 per cent. A portion of this will in the younger grass be represented by sugar, starch, &c.; their per centage of moisture is also greater.

There are no grounds whatever for assigning to the younger grasses a greater percentage of albuminous matter or flesh-forming principle.

The proportion of woody fibre is doubtless considerably influenced by the quickness of growth also, to which I have called attention in a former number of this journal, the plants of quicker growth having a less proportion of woody fibre, and more of starch, sugar, &c. And to this I am disposed in a great degree to attribute the fattening properties of fertile pastures in comparison with those on poorer soils—in corroboration of which I may state that I have, by dressing with bones and other manures, inducing quickness of growth, converted old store pastures on clay, on which cattle would graze for a season with but little increase, into fattening pastures. Mr. Garnett also, of Wharfeside, near Otley, has found a like effect from top-dressing pasture with guano, at the rate of 1 cwt., and 1 cwt. common salt per acre for three seasons in succession; this pasture on alluvial loam carries in consequence 50 per cent. more cattle and fattens them much more quickly than before. Mr. Garnett attributes this not solely to the increased produce, but also to the improved quality of the grass, which in my estimation will in a great measure be owing to the greater percentage of sugar, starch, &c.

Assuming that cattle whilst on pasture require an equal quantity of solid matter as when supplied with 175 lbs. turnips and 5 lbs. of straw per day, they would consume 23·65 lbs., or 4,290 lbs. in 24 weeks, and taking into account that pastures have some admixture of perennial clovers, which are richer in albuminous matter than the natural grasses, we may compute the percentage of albumen as increased to 12 per cent. Thus the 4,290 lbs. consumed in 24 weeks will contain of albuminous matter 516 lbs.; that in the turnips with straw is computed at 516·60.

These inquiries tend to show that the increase of oil-cake and other substances, rich in albuminous matter, in the more advanced stages of feeding, has no other effect, *so far as the nitrogenous element is concerned*, than to enrich the manure; they tend likewise to show that the gain of weight in fattening is much more due than has hitherto been supposed, to the oil and other respiratory or fat-forming ingredients of the food.

I compute the gain of fat per week as consisting of—

Loose fat, or tallow	3 lbs.
Suet, or fat in the loin	1
Fat mixed with meat and sold as beef ..	7
	11

Nor do I think this an over-estimate, as it will be admitted that the gain of carcase fat, independent of the loose fat or tallow, is greater than that of flesh. The whole of the exterior of the carcase immediately under the skin is covered with a layer of fat, which, when the beast is lean, scarcely exceeds ⅛ to ¼ inch in thickness, whilst in fattening it increases frequently to 1½, *i. e.* sixfold or upwards. The fatty portions throughout increase also, and the flesh becomes intermixed with fat, and assumes what is termed the mottled appearance, which is the characteristic of beef of prime quality.

The 24 weeks will then show an increase of 264 lbs. of fat. As the oil in the turnips and straw is computed to be only 71·65 lbs., there does not remain a doubt on my mind that the greater proportion of fat stored up in this course of feeding is derived from the starch, sugar, &c.

In computing the proportion of fat derived from starch, a different relation obtains from what is observed in its efficacy for respiration, owing to the greater percentage of oxygen in starch and sugar as compared with that in oil, oxygen being required in much larger quantity than carbon or hydrogen in the respiratory process.

	Oxygen.	Carbon.	Hydrogen.
Starch and sugar contain on an average	51·36 ..	42·23 ..	6·41
Fat or oil	10·13 ..	78·13 ..	11·74

The proportion of carbon to hydrogen in each is very similar, being somewhat less than 7 of carbon to 1 of hydrogen, from which it appears that nearly 2 lbs. of starch are requisite to make 1 lb of solid fat, or about 90 of starch for 50 of fat.

Physiologists attribute to fat, besides the maintenance of heat, the property of facilitating digestion. Lehmann describes fat as one of the most active agents in effecting the metamorphosis of food, and confirms this by his own experiments, and others by Elsässer.

It seems probable that the English feeder in fattening his cattle, and the foreign cook who saturates the lean-fed beef of his country with olive-oil, are alike unconsciously pursuing the same object—that of rendering their material more easy of digestion, and consequently more palatable.

In my treatment of *dairy* cows I find it advantageous to supply in addition to ordinary food, materials particularly rich in albuminous matter, and to give more in proportion to those cows which give the largest yield of milk.

My conclusions in regard to *fattening* are, that by ordinary food you can afford an adequate supply of albumen for the maintenance and likewise for the increase in assimilation of fibrine, and that the gain by fattening is in a great measure due to the starch, sugar, and other fat-forming principles, in which I include oil: without a due proportion of oil I should not expect success in fattening.

Value for Feeding purposes of various articles of Food.—I now propose to examine the composition of materials chiefly used for feeding, and their efficacy for the production of fat. I give the per-centage of starch, sugar, &c., and reduce them to fat, taking the proportion as 90 of starch, sugar, &c., to 50 of fat. I supply likewise the per-centage and value of their fertilizing constituents, which are of importance to the farmer and feeder. The computations were made on the materials in their usual state of dryness, except in the case of turnips, which are taken as free from moisture, and therefore valued at £4 10s. per ton, = 10s, per ton in the natural state.

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* *Vide* Lehmann, Cavendish Society's Ed., vol. iii.

From the following tabular statement, it will be found that in wheat-straw, for which I pay 35s. per ton, I obtain for 1s. 2½d. ·50 oil and 32lbs. starch, or (the starch reduced as oil) 18½lbs., available for the production of fat or for respiration. I know no other material from which I can derive, by purchase, an equal amount of this element of food at so low a price. The value of straw calculated as manure is 9s. 7d. per ton.

Swedish turnips, at 10s. por ton, give of oil and starch reduced as oil 35lbs. for 2s. 2¼d. In comparative nutritive value, 10s. per ton is much too low an estimate.

Cost and Composition of 100lbs. of the following Substances used for Feeding:—

—	Cost.		100lbs. contain									Value of Nitrogen, Phosphoric Acid, and Potash.	Deduct Nitrogen for perspiration.	Net Value for Manure.
	Per ton.	Per 100lbs.	Oil.	Starch, Sugar, &c.	Oil, Starch, &c., computed as oil.	Nitrogen.		Phosphoric Acid.		Potash.				
						Weight.	Value.	Weight.	Value.	Weight.	Value.			
	£. s. d.	s. d.	lbs.	lbs.	lbs.	lbs.	d.	lbs.	d.	lbs.	d.	s. d.	d.	s. d.
Meadow-hay	4 0 0	3 7	2·68	39·75	24 63	1·48	10·62	·90	1·35	1·50	4·50	1 4½	2 1-12	1 2¼
Wheat-straw	1 15 0	1 7	·50	32·	18 50	·42	3·	·14	·21	·65	2·16	0 5	½	0 5
Swedish turnips.........	4 10 0	4 0	2·	60·	35·	2.40	17·28	·80	1·20	2·25	6·75	2 1¼	3½	1 9¾
Oilcake	9 6 8	8 4	12·	38·	33·	5.	36·	2·25	3·37	1·75	5·25	3 8½	7¼	3 1¾
Beans	9 6 8	8 4	2·	42·	25·30	4.45	32·	·86	1·29	1·11	3·33	3 0½	6½	2 6
Indian Meal	9 6 8	8 4	7·	60·	40·	2.25	16·20	·19	·28	·17	·51	1 5	3¼	1 1¾
Carob or locust bean..	9 6 8	8 4	6·76	57·	35·	·64	3·75	No analysis of ash.				say 0 5¾		0 5

Cost of Fat derived from 100lbs. of the following Feeding Substances:—

	Meadow-hay.	Wheat-straw.	Swedish turnips.	Oilcake.	Beans.	Indian Meal.	Carob Beans.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Cost of 100lbs.	3 7	1 7	4 0	8 4	8 4	8 4	8 4
Deduct net value of manure...	1 2¼	0 5	1 9¾	3 1¾	2 6	1 1¾	0 5
Cost for production for fat......	2 4¾	1 2	2 2¼	5 2¼	5 10	7 2¼	7 11
Oil and starch, &c, computed as oil in lbs.	24·63	18·50	35·	33·	25·30	40·	35·

Oilcake, beans, Indian-meal, and locust-beans have been taken at the same price, viz., 1d. per lb., or £9 6s. 8d. per ton; any variation in their relative market value will alter the figures here given in the same proportion. Of the four, oilcake is found to be the cheapest at the same price, being much preferable to beans for fattening. The locust or carob bean, at the same price, is *much* the dearest. In these computations the albuminous matter is calculated only on its value as manure. When assimilated in flesh or fibrine it has a higher value in proportion to its weight than fat, and it is on the due apportionment of materials rich in albuminous matter that our success in feeding cattle with profit in great measure depends. For the purpose of acquiring more precise information, I availed myself of the assistance of Professor Way, who selected for analysis a piece of beef *particularly lean*, and reported it to consist of—

Water	53.81
Fat	3·10
Albuminous matter..................	24 06
Other substances....................	19·3
	100 00

This material, though of its kind particularly rich in nitrogen, is not worth more as *manure* than 2s. 6½d. per 100 lbs., or less than one-twentieth of its value as *food*.

These investigations, which have more or less occupied my attention for several years, have changed considerably my mode of treatment for fattening. I am satisfied that the *most economical* use of food rich in albuminous matter is together with straw or other materials which are deficient in this element. I now use for fattening, *bean* and *oat-straw* and *shells of oats* in equal proportions, with a limited supply of *turnips*, never exceeding 60 lbs. per day to each, and the following extra food;—

3 lbs. of rape cake..
¾ lb. malt combs } steamed together with the straw.
¾ lb. bran......

If my turnips fail in spring, by supplying 2 to 2½ lbs. of rape-cake in addition I find the result equally favourable. On this fare my cattle thrive satisfactorily, and make usually at the rate of 14 lbs. per week each. I sometimes substitute ½ lb. per day of linseed-oil for the 2 lbs. of rape-cake without turnips, the gain by which I find satisfactory. One of a lot of 14 fed in this mode gained at the rate of 24 lbs. per week from March up to July, 1856, being the greatest gain I have observed in the course of my experience as a feeder.

Having received numerous applications from vendors to become a purchaser, and inquiries as to what I thought of the properties of carob or locust beans, I may call attention to its comparative composition with Indian meal, which it most nearly resembles, and in comparison with which its value is decidedly inferior. There is little difference in the feeding effects of sugar and starch; the former contains somewhat more of oxygen, which in some slight degree facilitates its consumption in the respiratory process; but in the same ratio it is deficient in carbon, and has consequently less of the property of producing fat.

The respective quantities of oxygen from the air required for the consumption of

100 parts of starch are	....	118·52
„ sugar	....	106·67
„ fat	....	292·14

These numbers seem to denote the comparitive labour or exercise of the organs of respiration requisite for the consumption of these elements of food respectively, or, in other words, for the support of vitality. Their relative composition is—

	CARBON.	HYDROGEN.	OXYGEN.	
Fat	78·13 ..	11·74 ..	10·13	per cent.
Starch ..	44·45 ..	6·17 ..	49·38	
Sugar ..	40· ..	6·66 ..	53·34	

Whilst these analyses have been in the course of preparation, with the view of being inserted in the Society's Journal, another month has elapsed, during which I have proceeded with my observations on dairy produce. On the 12th of March I purchased Mr. Smith's cow (see p. 153) for £12 10s., being more than her market-value, for the purpose of trying her on my food; her yield of milk had then diminished to 8 quarts per day. On the 31st of March, four weeks from the former weighing, and nineteen days after being treated with my food, her yield of milk had increased to 9½ quarts per day, and her weight to 8 cwt. 1 qr., being 28 lbs. increase.

Mr. Pawson's cow, which was continued on the same food, viz., meadow-hay *ad libitum*, and a more limited supply of turnips, reduced her yield of milk to less than 5 quarts per day, without alteration in her weight.

My cow first placed on trial with those of Mr. Smith and Mr. Pawson, gave a yield of milk of 12 quarts per day, and gained 28 lbs. in the four weeks, her weight on the 31st of March being 10 cwt. 2 qrs.

The weight and the yield of milk of the six, on the 31st of March, were—

	March 4.			Yield of Milk per Day.	March 31.			Yield of Milk per Day.	Gain in 4 Weeks.
	cwt.	qrs.	lbs.	Quarts.	cwt.	qrs.	lbs.	Quarts.	lbs.
Weight of No. 1.	10	0	26	8	10	3	0	8·9	58
„ 2.	11	1	0	14	11	3	0	14·9	56
„ 4.	10	0	0	14½	10	1	0	13	28
„ 6.	10	3	0	14	11	2	0	12	84
„ 7.	11	0	0	10	11	3	0	10	84
„ 11.	9	2	0	11	10	1	0	12	84

On referring to the previous weighing, there was little or no gain from Feb. 4th to March 4th, the cows being at that time in a somewhat more relaxed state. During March they wholly regained their consistency. The gain shown in the weighing, March 31, by the six cows, appears therefore unusually great. It should however be computed as made during the eight weeks, from Feb. 4th to March 31st, being with an average yield of nearly 12 quarts (11·66) per day each, at the rate of 8 1-6ths lbs. each per week on the average.

No. 11, it will be observed, is stated as giving more milk on the 31st than on the 4th of March. It occasionally happens that cows drop their yield of milk for a day or two, and then regain it, especially when in use. The whole of these six cows were kept free from calf till February, when Nos. 2 and 4 were sent to the bull. I had some hesitation in regard to No. 4, from her having suffered from pleuro. Her milk, tested by a lactometer, denoted a less than average proportion of cream; still in quantity, and keeping up its yield for a length of time, being of more than ordinary capability, I decided to retain her.

Nos. 1 and 7, which are giving respectively 8 and 10 quarts per day, are in a state of fatness; they will probably be sold in June as prime fat, when their yield of milk will probably be 6 to 8 quarts per day each. They may be expected to fetch £20 to £23. No. 6 is also in a state of forwardness. No. 11, which suffered considerably from pleuro, is in comparatively lower condition.

During the season, from the close of October to the close of January, I avoid purchasing near-calving cows, which are then unusually dear, my replenishments being made with cows giving a low range of milk and intended for fattening; I find them more profitable than those which are quite dry. The present season I had additional grounds for abstaining from buying high-priced cows from the recent presence of pleuro.

On the 2nd of March I had occasion to purchase a calving cow, which was reported to have calved on 28th of February. Her weight on the 4th of March was 9 cwt. 1 qr. I supplied her with 35 lbs. of mangel, and hay *ad libitum*, of which she ate 22 lbs. per day. The greatest yield she attained was somewhat more than 13 quarts per day. On the 31st of March her weight was 9 cwt., being a loss of 28 lbs. in four weeks. Her yield of milk had diminished to 11¼ quarts per day: a week after this her milk, during six days, was kept apart, and averaged 10 quarts per day; being at first rather more, at the close rather less, than this. The cream produced from these 60 quarts was 9 pints, the butter 63 oz. The butter from each quart of cream was 14 oz. The proportion of butter to milk was 63 oz. from 60 quarts—rather more than 1 oz. per quart.

An equal quantity of milk from a cow (calved Oct. 8th) treated with steamed food, and set apart for comparison, gave less than 7 pints of cream, which produced 79 oz. of butter.

In quality and agreeableness the butter from steamed food and cake was decidedly superior to that from hay and mangel.

Mr. Stansfcld, of Chertsey, has supplied me with the following interesting particulars of two Alderney cows which were treated as follows:—

	Rape-cake. lbs.	Bean-meal. lbs.	Bran. lbs.	Malt-combs. lbs.
From Dec. 1 to Jan. 15 with swedes and meadow-hay.				
From Jan. 15 to Feb. 17, pulped and fermented swedes, meadow-hay, and	3	2	2	2
From Feb. 17 to May 1	5	—	2	2

Results—Dec. 1 to Jan. 15, yield of butter from each quart of cream, 10¾ oz.; Jan. 15 to Feb. 17, 14 oz.; Feb. 17 to May 1, 18⅔ oz. The yield of butter in proportion to milk, Dec. 1 to Jan. 15, is described as unsatisfactory; ditto, Feb. 17 to May, as 2 oz. per quart, which is their maximum proportion. Soon after calving the two cows gave 18 quarts of milk per day; on the 15th of May 15 quarts per day.

Mr. Stansfeld has completely satisfied himself that by the process of fermentation the turnip loses its disagreeable taste, and that his butter is of excellent quality.

If I take the supply of turnips, 120 lbs. per day, as requisite for the maintenance of my cow, the nutritive elements will be—

Albumen.	Oil.	Starch and Sugar.
1·98	·264	7·92

Reckoning the oil as used for respiration, and computing it in proportion of 5 to 2 as compared with starch =	·66
	8·58

The food supplied to this cow consists of—

	Hay.	Stored Mangel	Total.
Weight..........lbs.	22	35	57
Water..............	2·25	28·0	30·25
Dry................	19·36	7·	26·36
Albumen	2·03	1·0·5	3·08
Oil	·59	—	·59
Starch and Sugar	8·74	4·20	12.94
Fibre	6·05	1·05	1·10
Minerals............	1·95	·70	2·65
Phosphoric Acid	·20	·05	·35

		Oz.
The 13 quarts of milk yielded of butter ...		13·60
Deduct for moisture, &c..................		2·28
		11·32
Butter in the skimmed milk estimated as ...		·68
		oz. 12·00
12 oz. of pure oil in the butter are $\frac{3}{4}$ lb. =		·75
		lbs.
The oil in the food........................		·59
The starch and sugar.........	12·94	
Used for animal respiration	8·58	
		4·36

There appears, then, in this supply of food ·59 lb. oil and 4·36 lbs. starch for the production of ·75 in the butter from 13 quarts per day, the cow's greatest yield. At the time the milk was tested, aftermath hay was substituted for first-crop hay, in equal quantity. This, it will be observed, is decidedly richer in oil. Her produce had lessened to 10 quarts per day; her production of butter was 10·50 oz. per day, or of pure oil about 9 oz.; for the supply of oil the aftermath hay alone would be much more than adequate.

On examining the adequacy of the food for the supply of albumen for the casein,

	lbs.
I find this to be	3·08
I assume that in 120lbs. of turnips, as required for maintenance, in a normal state..........	1·98
	1·10

Which, according to Haidlen's analysis, will be adequate to the supply of 8·60 quarts per day. The supply of mineral substances is in excess.

The cow under this treatment gave—

Soon after calving, fully..........	13 quarts per day.
5 weeks after calving............	$11\frac{1}{4}$ quarts per day.
In less than 8 weeks after calving..	9 quarts per day.

and with this there occurred also a loss of weight.

We find this cow, supplied with food amply rich in every element suited to her wants and purposes, with the exception of the nitrogenous principle only, lowering her condition, and likewise her yield of milk till it approaches a quantity for which her food enables her to supply a due proportion of casein.

About the 20th of April the cow's yield being reduced to 9 quarts per day, her food was changed to steamed mixture; soon after this her yield increased to 11 quarts per day. Her weight April 28th, 9 cwt.; May 16th, 9 cwts. 14lbs., yield of milk 11 quarts.

I now introduce the dairy statistics of Mr. Alcock, of Aireville, Skipton, who has for some time been practising my method of treatment, with such modifications as are suited to his circumstances.

During the winter season Mr. Alcock's food consisted of mangel, of which he gave 20lbs. per day to each, uncooked; together with steam food *ad libitum*, consisting of wheat and bean straw, and shells of oats.

	Lbs per Day.
Carob bean and Indian meal, for each	3
Bran and malt combs	$1\frac{3}{4}$
Bean meal	$3\frac{1}{2}$
Rapecake*	3
Of extra food......	$11\frac{1}{4}$

From March 19th, when his store of mangel was exhausted, he increased his supply of Indian meal to 4lbs. per day, and omitted the carob bean.

During the month of January Mr. Alcock obtained from 759 quarts of milk 1,323 ozs. of butter, being from each 16 quarts $26\frac{5}{8}$ ozs. During February and March, from 7,368 quarts of milk, 12,453 ozs. of butter, or from each 16 quarts fully 27 ozs.; so that rather less than $9\frac{1}{2}$ quarts of milk have produced 16 ozs. of butter. The average produce of cream was $20\frac{1}{2}$ ozs.

Mr. Alcock fattens his cows whilst giving milk, and sells them whilst giving 4 to 6 quarts per day. He quite agrees with me, that it is far more profitable to buy far-milked cows for fattening; and obtains, from a change to his food, 2 to 3 quarts per day more than the cow had given previously.

Though Mr. Alcock's cream is not so rich as what I have described in a former Journal, it is more than ordinarily so. His mode of separating his milk from his cream differs from my own, his milk being set up in leaden vessels, from which, on the cream being formed, the old milk is drawn, by taking a plug from a hollow tube with perforated holes in the centre of the vessel. To this difference I am disposed in some degree to attribute the less richness of Mr. Alcock's cream. On examining the cream with a spoon, after the dairy-keeper had drawn off the milk, I observed some portion of milk, which would have escaped through my perforated skimmer.

Mr. Alcock's proportion of butter from milk, which is the matter of practical importance, is greater than what I have shown in a former volume of this Journal, being from each 16 quarts of milk 27 ozs. of butter.

(To be continued.)

KYLOE CATTLE.

Scotland possesses only two varieties of cattle that have been settled into breeds, the cattle of the West Highlands and of Galloway, denominated the Argyle and Galloway breeds. The former exist in the largest size in the county of Argyle, as that country affords the best maintenance throughout the year. The size is lessened over the northern counties of the main land, and the general conformation is impaired; the bulk is further diminished in the Hebridean Islands, and further still in the Orkney and Shetland Islands, which afford the coarsest animals, and those of the Hebrides are more thriving and symmetrical. The Argyle breed and the West Highland cattle, the Kyloes and the cattle of the Western and Northern Islands—these distinctions are the modern understanding of the terms.

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* The rape-cake used by Mr. Alcock was of foreign manufacture, evidently rich in oil, but containing mustard, and on this account supplied in less proportion.

These cattle are coloured in very many shades and varieties, black being the favourite and prevailing colour, which is much intermixed with white, red, dun, and brindled. The horns are long, wide, and tapering, and in accordance with the size of the animal. The Argyle cattle have the largest horns; the Hebridean Kyloe has the finest spear-horn, clear, glittering, and pointed; while the Northern Islands show a coarse and stunted horn, short and proportional to the animal frames. The eye is fierce, and the character mischievous, habits restless and unruly, body short, paunch deep, hide thick, flesh very good, and finely marbled with veins of fat. The maturity is regulated by the maintenance that is afforded; the age of six years is attained before a fattened carcase is produced; four years in the native country, and two in the lowland treatment.

It is well known that the Galloway cattle afforded the material service of the shorthorn breed, hence called the "alloy," in reproach of the coarse mixture that was introduced into the Yorkshire cattle. Passing over that point at present, as unconnected with our present subject, the Galloway cattle have been much improved among themselves by judicious selections, and much yet remains to be done. Vast quantities of these animals are transported to the southern turnip counties, and are much esteemed for beef and profit. But the old faults still remain, and in abundance.

The Kyloe cattle, properly so called, are a most motley production in colour, shape, and quality, by a promiscuous breeding, without any care or attention. The mountains and the open range of hill grounds do not afford the benefit of enclosures in the adaptation and restriction of the sexual intercourse, which is consequently altogether unconfined, and spreads into numberless descents and endless pedigrees. Good and bad animals are thus produced in accidental varieties: the latter always predominates and the former bear the usual proportion to the efforts of nature's course. This unrestricted breeding has gone on from the earliest records, and also the careless provision of winter food, on which the whole success depends of Highland farming with cattle or sheep. But the most unfavourable circumstances of situation do not prevent the selection, for the purpose of breeding, of the best shape, and forms that are produced by accident, and from which every refinement of animals has progressed. It is not at all advocated here that the size of the Kyloe cattle be increased, or any cross be introduced by foreign blood; the present bulk of the animal is very ample for the maintenance, and any mixture of blood would disarrange the long-established descent, and introduce an irretrievable confusion. Such mixtures of species and varieties in animals continue for a time, gradually degenerate into numberless branches, and at last are wholly extinguished. The true way is to improve cattle among themselves, by selecting the best specimens for breeding, and carefully rejecting all bad ones, and to continue in this course most obstinately; but not to produce a size or quality that is beyond the circumstances of use. Abundance of materials exist, and want only the application, even under the ordinary management of Kyloe cattle.

Our experience and acquaintance having been very considerable among Kyloe cattle, our attention was very naturally directed to their qualities, habits, and varieties. It appeared that very valuable distinct breeds may be produced by a careful selection from the very heterogeneous multitude—a glossy black variety, that comes at present from the Western Islands, with white colours on the face, breast, and flanks, not largely termingled, but pleasingly patched; a brindled variety, with little or no white colour on the body, at least very sparingly, the red brindles being of a very deep dye; and a breed wholly dun in colour, without the least mixture of any other stain, and the coat of hair thick and curly. This dun colour abounds among all the Highland cattle of Scotland, and always indicates a hardiness and vigorous constitution, and a propensity to fatten, in every animal organization. These two properties cannot be surpassed in any breed of cattle; they form the strongest stamina of existence, and are certain proofs of superiority. A most choice breed of Kyloes would be propagated by this selection of the dun colour, hardy and vigorous, fleshy and symmetrical, with a coat of hair close and curly, with a hide elastic, and mellow in the thickness. Mr. Quartly's Devon cattle may be well quoted as an example of this curly coat of hair, and possess all the qualities above-mentioned, with an acknowledged superiority of the points of excellence. Our judgment has ever most highly approved these Devon cattle.

A herd of dun Kyloe cattle would be most picturesque and pleasing to the fancy, besides inheriting the very best qualities of excellence. A similar valuable breed of Welsh ponies may be propagated from the stray productions of the dun colour that are found on the mountains of the Principality. The uniform colour of animals ever carries along with it a combination of qualities that do not attend a heterogeneous colouring.

A dark-red brindled breed of Kyloe, without the least mixture of any other colour, would be valuable; or the dun variety equally beautiful, but wanting the curly coat of hair, and more resembling the cattle of the Lowlands.

The glossy black variety are very similar to the Lowland cattle, differing only in size and proportions. The small animals are very handsome, and a careful selection from among a multitude of Kyloe cattle will find a symmetry that is unequalled by the most refined cattle of the present day.

It would be absurd to hold out in expectation that equal results with the labours of Bakewell and Colling would attend the refined breeding of Kyloe cattle; controlling circumstances totally forbid; but the road is open to very large improvements by the simple means of ordinary management. Some few breeders have adopted the proper course, and have shown the certain results; but the attempts are few and far between, and have little notice, though profits are equally certain as in other cases, but always proportionate to the possible means of application. An enlargement of the size of the animals, and any considerable refinement of the general organization, would unfit Kyloe cattle to be tenants of the mountains and stormy islands; the climate will not allow any great advancement beyond its permission. But it is quite possible and profitable to select colours, shapes, and qualities to please the eye and fill the purse, with superior animals, and to retain the adaptation that has been acquired by an immemorial residence and confirmed habits. The best shapes and qualities that exist in a small number of animals could with equal justice constitute the whole herd of Kyloe cattle; the organization would not be in any way altered, nor the carcase impaired. The same food would maintain them, and the same expense rear the calves into articles of sale.

The cattle of Scotland in the polled Galloway breed, and the Kyloe cattle, comprehending the larger breed of Argyleshire, constitute the first quality of beef in Britain, and fetch at an average 6d. per Smithfield stone over any fattened animals in the United Kingdom. This fact establishes the truth, that as animals are refined in the organization, the quality of the flesh is deteriorated. The flesh is better of these cattle when fattened in Scotland than in England, owing to the very superior quality of the turnips in the former country, which produces the very best beef with the assistance of straws only; and, probably, with the exception of the very richest pastures in England, these cattle of Scotland pay more per head and per acre than any other cattle in Britain; thus showing that, after all the breeding that has been done, the best flesh and most profit are produced by animals that have comparatively unimproved.

The great and glaring defects of the symmetrical form of Scotch cattle in general are—the back sunk, a low paunchy belly, flat ribs, and a large vacuity between the backbone and short ribs. But very few specimens are found that are wholly rid of these defects; but the small number is sufficient to produce a progeny that would not inherit those properties. These qualities are very largely apparent at the fat cattle shows of the Smithfield Club, and at the last exhibition, a most obtuse discrimination "*only*" could have selected as examples the Galloway animals that were there shown as fattened carcases, exhibiting in the superlative degree every defect that has been mentioned. The want of early maturity is a defect of an impossible remedy, owing to uncontrollable causes: an average of five or six years is required to fatten a Kyloe, three and a-half to four years in the native country, and one and a-half to two years in the Lowland management.

Refinements in the animal organization require a corresponding advancement in the quantity and quality of food, which do not attend the breeding and rearing of Kyloe cattle, which are done wholly on straw and hay, roots being wholly removed beyond any reach of use.

Every action of human performance is capable of improved advancement, according to the circumstances that control the operation and its consequences. No human power can remove or control these circumstances, that are the best of all teachers, and the most despotic of all governors; the power is omnipotent on earth, and directs all events and consequences. Kyloe cattle have been forged by the soil and fashioned by the climate into an inhabitant of the mountains and islands; a long usage has habituated the wants to the productions, and the habits have been manufactured from the constant attractions. Nature always produces strong varieties of superiority in all its works, which maintain it on being reproduced; and this excellence being maintained, a superior organization is supported and supplied. But it may be advanced beyond the common means of aliment, and then succumb; and so with the Kyloe cattle: that would not suit the circumstances of life, if refined beyond its power. But no obstacle prevents the good animals forming entire herds, as well as existing in small numbers; and on this simple principle the whole class of cattle may be changed, and very much advanced in value. The road is open, the progress easy, and the object certain of attainment.

J. D.

THE CATTLE MURRAIN.

> "Crebro ferit: demissæ aures: incertus ibidem
> Sudor, et ille quidem morituris frigidus: aret
> Pellis, et ad tactum tractanti dura resistit."
> GEORGICS, Lib. III.

Sad though it be, no doubt can now exist that a very dreadful and fatal disease has appeared among the cattle in various parts of the United Kingdom. I therefore venture to offer to your readers the following rough notes of some cases which have recently come under my own notice; at the same time I do not venture to attempt a scientific account of either the nature or treatment of the disease, but trust to be able to point out its symptoms in a manner sufficiently plain to render its identity unmistakable. Before proceeding further, it will perhaps be well to say a few words as to the situation and soil of the farms upon which the disease has appeared. They join each other, and lie low in a valley; a considerable river intersects one of them, through which the cattle are occasionally driven to pasture. The soil on both is principally alluvial deposit upon a gravelly subsoil. I do not, however, attach any importance to these particulars, as I am quite certain that the disease was imported, and in no way originated in the neighbourhood. No doubt whatever can exist of its highly infectious nature; and I cannot urge too strongly the absolute necessity of using every precaution to prevent the plague spreading.

I shall now proceed to point out—

1. The symptoms of the various stages of the disease.
2. The treatment which has been pursued with, I regret to say, indifferent success.
3. The *post mortem* appearances of the lungs and other internal organs.

I have endeavoured—both from my own observation, and, what is far more important, from the observation of the cowman and other attendants upon the cattle—to ascertain what is really the FIRST symptom of the disease. I have laid particular stress upon this point, as I believe every chance of success depends upon taking the disease in its early stages. In milch cows, the failing of the milk is, I think, an unerring symptom. I do not mean to say that a cow's milk may not fail from other causes; but an attack of the disease is invariably preceded by that symptom. The other most prominent early symptoms are the withdrawal of the beast from the rest of the herd; he stands alone, and does not chew the cud; his coat stares; he pokes his head forward in a peculiar way; the appetite fails, and the eyes glisten in an unnatural manner. More serious symptoms soon succeed: he heaves at the flanks; a short dry cough comes on, which gradually increases in intensity; the horns and feet at first become hot, and in the later stage cold; a slight running of the nose is perceptible, the beast foams at the mouth, and DIES. The course of the disease runs from five days to three weeks, the time depending a good deal upon the condition of the animal; the better the beast, the quicker he dies.

I now proceed to the treatment which has been tried, though I regret to say that the results are far from satisfactory. Within the last five or six months twenty-four cases have occurred; twelve have already proved fatal; five are partially recovered—that is to say, they have got rid of the most violent symptoms, but have bad coughs still, and look very poor: so I think their ultimate recovery very doubtful. One cow seems to have got over the attack. There was also a yearling bull which apparently had become convalescent; but he has had a relapse, and remains, with five more, in a deplorable state.

Bleeding is the "sheet anchor" of the treatment. Six or seven quarts were taken at the first bleeding, and repeated in such quantities, and at such intervals, as the symptoms seemed to require. A dose of 1lb. of Glauber salts and ½lb. of treacle was next given; and afterwards, three times a day,

Emetic tartar..........	4 drachms,
Digitalis..............	1 drachm,
Nitre	2 drachms,

divided into three doses.

Strong blisters were also applied behind the fore legs, and a rowel inserted into the dewlap. Hellebore was also given in some cases.

The homœopathic treatment was tried in one or two cases, but without any results whatever.

And now as to the "post mortem" appearances. And upon this point, not being a veterinary surgeon, I trust great indulgence will be shown me. Upon opening the body, no doubt can for a moment exist as to the cause of death: it is intense inflammation of the lungs and parts immediately connected with them. The substance of the lungs exhibit a highly inflamed and unnatural appearance; in fact, they look very much like a large lump of *Castile* or mottled soap. The little air-cells being entirely filled with a bloody matter, a considerable quantity of water is also found in the chest, and the liver shows slight appearances of inflammation. The heart is generally healthy, though in some cases slightly affected.

In conclusion I shall say a few words relative to the source and to the infectious nature of the disease. That the disease was imported *from Ireland* I have no doubt, and for these reasons: in the opening of the present year, the occupiers of the farms I have already referred to brought over some cattle into Wales from Ireland. Upon their arrival, one at least of them was observed to have a cough. No suspicion was attached to it at the time; but ere long the disease which I have attempted to describe, broke out in all its virulence; at first appearing among the Irish, and afterwards among the native cattle. As a proof of its infectious nature, I will adduce one very strong case. Subsequently to the breaking out of the disease, one of the occupiers bought a bull in the neighbourhood, and, unfortunately, turned him into a field in which some of the affected cattle had been grazing. In a few days he was seized with the malady, and still remains in a very precarious state.

I must apologize for having trespassed so long upon your readers' patience; but, however imperfect these remarks may be, they are the result of what has occurred within my own knowledge. One thing, however, is very clear, that farmers cannot be too cautious in admitting recent purchases to graze with their stock.

On the causes and remedies of the disease I offer no comment; such remarks belong rather to those whose education and experience point out as the fittest judges of that part of this sad subject.

Cardiganshire, South Wales, T. S. H.
Sept. 17*th*, 1857.

THE BLACK PALMER CATERPILLAR.

The history of this destructive enemy to the farmer was made the subject of a Prize Essay, by George Newport, Esq., M. R. C. S. & M. E. S., which was published in the year 1838, when the ravages of the palmer had attracted the notice and excited the apprehensions of those who had suffered from its visitation. But its appearances, like "angel visits," are so "few and far between," that it is still a mystery to the generality of farmers, in respect to the quarter from whence it comes, or to what particular fly it owes its origin. With regard to the first question, it is believed that it has a foreign origin, from the fact that, at times, myriads of the flies are washed ashore by the tide; whilst they are also found in vast numbers in an exhausted state on the beach, where having rested a-while, they disperse themselves into the interior. It is very probable that they have thus migrated; but it is equally certain that it has become naturalized with us; and however distant may be the times of its appearance in the same locality, there is no season in which it does not appear in one place or other, although not always producing the same destructive effects. We have, therefore, in compliance with the request of a correspondent, taken some pains to investigate the subject, and now present to our readers the results.

The *Black Palmer*, or canker-worm, is the production of a species of *saw-fly* or *tenthredo*, bearing in entomology the name of *Athalia centifoliæ*. It is in shape similar to the honey-bee or the drone, but smaller. Its colour is yellow, except the head and a few spots, which are black. The male is smaller and more slender than the female, but is similarly formed in other respects. It makes its first appearance about the middle of May, or towards the first week in June, when the early-sown turnips are coming forward; it is always seen in immense swarms, settling upon the turnips, where they deposit their eggs on the under side of the leaf. In a few days these are hatched by the heat of the sun, and the larva makes its appearance, at first, not more than half-a-line in length.* If, however, the weather proves cold, the eggs are either destroyed or it is longer before the larvæ appear. They are no sooner emancipated than they attack the under side of the leaves, which are quickly devoured, and then the upper part becomes their prey; so that in an incredibly short period a whole field, from a flourishing crop covering the ground, exhibits the appearance of stalks only, everything being devoured but the midrib fibres, and the entire crop is destroyed. There are at least two broods of these insects in the year. The eggs that are first deposited, pass quickly through the stages of larvæ, and nymphæ, or papæ, and become perfect flies in July or August, when these also deposit their eggs, and with the same destructive results. The writer has seen a field of turnips thus completely destroyed by them, when the bulbs had attained a considerable size, and the ground was covered with the foliage. They sometimes appear as late as October; but it is only when that month is unusually warm, that they can effect much mischief, as the cold frosty nights enfeeble, if they do not wholly destroy them.

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* A line is the tenth part of an inch.

The larva changes its skin three times, at intervals of from five to seven days. After the last change, it attains its full maturity, and is then about an inch in length, and becomes doubly destructive, especially if the weather be bright and hot, which is particularly grateful to it. It is probable, however, that but few of the October brood have sufficient strength to go through the labour of preparing to enter the pupa or chrysalis state.

As soon as the larva has attained its full growth, it burrows into the ground to the depth of some inches, where it undergoes its next change, and becomes a chrysalis. With the first brood these changes are very quickly gone through, and a fresh progeny is produced. But the later broods, having entered the earth, form an oval cavity or cell, in which they remain until the following spring; still in the form of larvæ; not changing into the chrysalis state until about the latter end of April or beginning of May, and soon after assuming the form of the perfect fly. In the earth they form for themselves cocoons like all of the caterpillar tribe; these are about half an inch in length and a quarter of an inch in diameter, and in them the insect passes the winter in perfect security from the cold and wet, neither of which appears to injure it after it has completed its defence. A cold and wet spring and summer, however, retard, and probably prevent for the time, the development of those changes it undergoes, or rather should undergo at that period. And it is thus that we may account for its non-appearance in such seasons.

It has been ascertained that the charlock (*Sinapis arvensis*) is the most natural food of this insect; and that when this wild plant abounds, it will devour it first before attacking the turnips. The charlock is of the same family of plants with the mustard; and the predilection of the insect for that plant, pungent as its leaves are, is a singular fact in its history. It would be well if it confined its voracity to it; but it is far from being thus satisfied. It will make clean work of a field of turnips in an incredibly short period, devouring the entire cellular tissue, and leaving only the mid-rib and its fibrous branches; never leaving a plant whilst a particle of the softer portion of the leaf remains. We have never known a field of turnips recover from the injury, so as to be of the smallest use to the farmer; and when the caterpillar has done its work, the best plan is to plough up the ground at once, and prepare it for some other crop.

With regard to the means of preventing the mischief, we have heard of none hitherto, in which we place any confidence. It is only in the larva state that it can do mischief; but in that state it appears to bid defiance to the malice of its foes. Unslacked lime, wood ashes, salt, a rope dragged over the plants, &c., &c., have all in turn been tried without effecting a cure. Some have undoubtedly been destroyed by all these means, but "their name is legion," and fresh armies of them fill up the ranks of those destroyed. The most effectual plan hitherto adopted is that of turning ducks into the field. These birds are excessively fond of the black palmer, and will devour immense quantities of them. But a moderate-sized field of turnips would require an army of ducks in the proportion of at least fifty to the acre, to produce any sensible impression upon the enemy. Few persons have any idea of the vast numbers of the insect tribes that infest the crops. A friend of mine, many years ago, invented a plan for taking the green flies *(aphides)* off a field of beans infested with them. Two men worked the machine over a field of about eight acres, and took off *twelve bushels* of the *aphides*, which our friend presented to his pigs, who gratefully accepted and duly appreciated the gift. The "palmer" is probably less numerous, but a hundred times bigger, than the *aphis;* and how any reasonable stock of ducks on a farm could save a crop of eight or more acres of turnips, we are at a loss to conceive. It is found, too, that the food disagrees with the ducks; and it is not an improbable result that, without saving his turnips, a farmer would run the chance of losing his ducks also. Mr. Newport recommends that, when the yellow fly has made its appearance on the turnips, the whole field should be watered with sea-water or a solution of salt in water twice a day, in order to prevent the hatching of the eggs. This plan would be more practicable now than formerly, by means of the apparatus for distributing liquid manure; but still, it would be attended with some considerable trouble. All saline liquids are destructive to the insect tribes, especially those with soft skins, as the various kinds of larvæ; whilst the application of the moisture would in the first instance retard, if not wholly prevent, the hatching of the eggs. We are not by any means assured that the plan our friend adopted to save his beans, would not be effectual to take the palmer off the turnips. He used a light bag, about six feet long, each edge of which was nailed to a lath of the same length. This was drawn over the tops of the turnips; and the flies fell into it, and were removed from time to time into a cask. The difficulty with the palmer would be in preventing them from walking out of the bag. But if some caustic substance—quick-lime or wood-ashes, for instance—were kept in the bag, it would at once destroy the larvæ. At any rate, the plan is worth a trial, as it would be attended with very little trouble, and less expense; and the saving of a turnip crop is no light matter to a farmer. C.

N.B.—For a more detailed account of the tenthredo, we refer the reader to Marshall's Minutes of Norfolk Agriculture.

WAYLAND AGRICULTURAL ASSOCIATION.

The first meeting of this newly constituted society, which embraces one of the best districts of the county of Norfolk, was held on Wednesday in the snug but rather dull town of Watton. The exhibition of stock, roots, &c., took place in a field belonging to Mr. W. Massey; and when it is stated that there were upwards of 300 entries, it will be seen that the establishment of the association has been well received by the agriculturists of the neighbourhood. Some fine cart stallions were exhibited by Mr. T. Matthews, sen., and Mr. John Tingey; and the cart mares, colts, and fillies were altogether creditable. An appropriate prize was offered by the Rev. W. H. Hicks, in the shape of a silver medal, for the best hackney mare or gelding for saddle or harness purposes, and eleven competitors appeared in the field. This is a gratifying circumstance, as it shows that some attention is again being directed to the breeding of Norfolk hackneys, which formerly enjoyed a deservedly high reputation, but have rather lost ground of late years. A mare six years old, exhibited by Mr. George Jacobs, was highly commended. In the cattle department attention was attracted to a fine short-horn bull bred by the Marquis of Exeter, and exhibited by Mr. Wyrley Birch. This handsome animal received a prize. There were only two polled bulls entered, and they did not excite much notice. Mr. T. Matthews, sen., and Mr. J. Allday, exhibited some fine fat beasts; and there were also some good home-bred cows and heifers. There was a fair competition for the sheep prizes; and amongst the animals deserving notice were a fine ram shown by Mr. J. Sewell, some shearling ewes exhibited by Mr. Brampton Gurdon, M.P. (bred by Mr. J. Aylmer), some fat shearlings entered by the Hon. B. N. O. De Grey, and some lambs penned by Mr. T. Barton. The lambs were all commended by the judges. The roots presented a fair outside show, but the application of the dissecting-knife showed some interior defects in many of them—a hollowness or hardness in the centre, which is supposed to have resulted from an unequal distribution of moisture. There were scarcely any implements on the ground.

The judges of horses, cattle, &c., were Mr. John Clayden, Littlebury, Saffron Walden, Essex; Mr. John Fuller, Beachamwell, Swaffham, Norfolk; and Mr. E. Farre Sporle, Swaffham, Norfolk. It would have been difficult to have made a better selection; and the same remark applies to the judges in the roots class, Mr. H. B. Caldwell, Hillborough, Brandon, Norfolk; and Mr. T. Matthews, jun., Watton, Norfolk.

The following are the awards:—

HORSES.

For the best cart stallion, above 3 years old, silver medal, Mr. Thomas Matthews, sen.

For the best cart mare of any age, silver medal, Mr. John Tingey.

For the best cart colt or filly, not exceeding 3 years old, silver medal, Richard Dewing, Esq.

For the best cart foal, the silver medal, Mr. Thomas Matthews, sen.

CATTLE.

For the best horned bull of any age, the silver medal, Mr. Wyrley Birch.

For the best polled bull of any age, the silver medal, Mr. Charles Hartt.

For the best horned cow of any age, in calf or in milk, the silver medal, Mr. John Allday.

For the best polled cow of any age, in calf or in milk, the silver medal, Mr. Richard Salmon.

For the best horned (in calf) heifer, the silver medal, Mr. Thomas Matthews, sen.

For the best polled (in calf) heifer, the silver medal, Mr. Richard Salmon.

For the best fat beast of any age, the silver medal, Mr. Thomas Matthews, sen.

SHEEP.

For the best shearling ram, bred, hired, or brought, by the exhibiter, to be used in his own flock during the season, the silver medal, Mr. Morris Cooper.

For the best ram of any age, bred, hired, or brought by the exhibiter, to be used in his own flock during the season, the silver medal, Mr. John Sewell.

For the best five shearling ewes for breeding purposes, the silver medal, Mr. B. Gurdon, M.P.

For the best five ewes of any age for breeding purposes, the silver medal, Mr. John Sewell.

For the best five fat shearlings, the silver medal, the Hon. B. N. O. de Grey.

For the best ten lambs, the silver medal, Mr. Thos. Barton.

PIGS.

For the best boar pig of any age, the second class medal, Mr. Brampton Gurdon, M.P.

For the best breeding sow of any age, the second-class silver medal, Mr. B. Gurdon, M.P.

For the best litter of not less than six pigs, under ten weeks old, the second-class silver medal, the Hon. B. N. O. de Grey.

ROOTS.

For the best six long mangle wurzle, the bronze medal, Mrs. Brasnett, Griston.

For the best six globe mangel wurzel, the bronze medal, the Hon. B. N. O. de Grey, Rochelles.

For the best six swedes, bronze medal, Mr. Henry Oldfield, Ashill.

For the best six turnips of any other kind, the bronze medal, Mr. John Tingey, of Ellingham Hall.

For the best six carrots, the bronze medal, Messrs. Robert and Charles Hartt, Ashill.

LORD WALSINGHAM'S SPECIAL PRIZE.

For the best five shearling ewes of any distinct breed, a silver cup of the value of £5, was awarded to Mr. Brampton Gurdon, M.P.

THE REV. W. H. HICKS'S SPECIAL PRIZE.

For the best hackney mare or gelding for saddle or harness purposes, the silver medal, Mr. John Hargraves.

EXTRA STOCK.

Highly commended, Mr. William Chilvers, fat pig. Commended, Mr. William Batterhan, cart-horse; Mr. Robert M. Ward, entire horse; Mr. John Marsh, cart-mare.

At the dinner at the Wayland Hall, with which the proceedings agreeably closed, Lord Walsingham occupied the chair, "supported"—to use the phrase common on such occasions—by the Hon. F. Baring, Mr. H. B. Caldwell, Mr. Gurdon, M.P., and several of the leading clergymen and gentlemen of the neighbourhood. Altogether the party numbered about 100.

Of the post-prandial oratory little need be said. Mr. Clayden, in returning thanks for the "judges," congratulated the company on the success which had attended the Society's first effort in the direction of an exhibition of stock. Some of the horses shown would, he thought, have done credit to any county show, and the hacknies (which had been tested by a ride) were very good. The judges, in considering the relative merits of the sheep, had endeavoured to award their approbation to those which combined size with quality: size had been chiefly regarded, but the two must be combined. The sheep, he thought, ought to be selected before they were branded, in order that the owners might not be known. There were some good cattle on the ground, but the polled stock reflected little credit on the exhibitors. Mr. Caldwell spoke as usual to the point, adverting to the roots: "We thought," he said, "they were exceedingly good when we first began to inspect them, but when we examined them closely and used the knife, we were disappointed in their quality. We had rather a difficult task, as the roots did not come up to our expectations as to quality. I would advise young farmers not to overmuck their roots, as they may be sown too early and be overmucked. Some roots we were obliged to discard in consequence of their being coarse and stringy, and you will not lose by less over-forcing and a little later sowing." A few other toasts followed, and the proceedings passed off, on the whole, exceedingly well. The Society is much indebted to its active secretary, Mr. H. Woods, whose exertions appear to be justly appreciated by the members.

GLAMORGANSHIRE AGRICULTURAL ASSOCIATION.

With regard to the show of Tuesday, we are glad to be able to state that, as far as the opinions of several practical farmers can be relied on, it was by no means inferior to those of the past five or six years. If the stock was not altogether so numerous as we could wish to see, some of the animals were noble specimens, and would grace some of the first agricultural shows in England. The bull exhibited by Mr. J. Bruce Pryce was certainly a splendid animal, and was greatly admired for its perfect symmetry; the Rev. R. T. Tyler's yearling was particularly good, possessing some very capital points. Captain Entwistle's cows and their offsprings, and the Rev. R. T. Tyler's heifers were specially deserving of notice. There was not a very large show of sheep, but the quality was excellent—some pens exhibited by Mr. Robert Leyshon, of Island Farm, Mr. James Akers, Mr. Bruce Pryce, and others, being composed of very choice breeds. There were also some very useful long and short-wool rams exhibited. There was quite an average number of horses shown, many possessing very rare qualities. The stallion of Mr. Coltstone, which gained the first prize, was one of very fine breed, remarkable for his fire and spirit. Mr. David Griffith's Sampson, which gained the prize at the Royal Agricultural Show in 1853, was greatly admired. There were some capital stallions and mares shown, for hunting, coach, and for the general purposes of husbandry. The Suffolk cobs shown by Mr. Beaver, of the Cowbridge school, were splendid animals, and deservedly met with approbation. There were fine boars and sows with their litters on view; whilst the fowls, ducks, drakes, &c., were of good sort. We were very glad to see such a great and marked improvement, not only in the number, but in the quality of the various agricultural implements on show; many were from first-rate makers, possessing all the recent improvements, and were greatly and deservedly admired; the newly-invented reaping-machine, by Burgess and Key, of Newgate-street, London, attracted most attention.

The following is the award of the judges, Mr. Dowle, of Caerwent, and Mr. Higgen, of Wollaston Grange.

STOCK.

The best two cows in calf or in milk, and their offspring under twelve months' old, £5, Captain Entwistle.

The best cow in calf or in milk, £5, Captain Entwistle.

The best bull of any pure breed, above three years old, £5, John Bruce Pryce, Esq.

The best bull of any pure breed, not exceeding three years old, £5, Mr. Robert Leyshon, Bridgend; second best, £3, William Salmon, Esq.

The best yearling bull, of any pure breed, £5, Rev. R. T. Tyler; second best, £3, Mr. Thomas Howell, Llancadle.

The best two heifers, under three years old, in milk or in calf, £5, Rev. R. T. Tyler; second best, £2, Mr. Thomas Howell, Llancadle.

The best two heifers, under two years old, £3, Rev. J. M. Traherne; second best, £2, Mr. Robert Leyshon, Bridgend.

The best pair of two-year-old steers, £3, Mr. Thomas Howell, Llancadle.

The best pair of yearling ditto, £3, Captain Entwistle.

SHEEP.

The best long wool ram, £3, Mr. Henry Yorath, Molton; second best £2, Mr. Wm. Donne, Monkton.

The best yearling long wool ram £3, Mr. Thomas Preece, Wick; second best £2, Mr. Wm. Donne, Monkton.

The best five breeding ewes, long wool, which have suckled lambs until July 1st £5, Mr. Rob. Leyshon, Bridgend; second best £3, Mr. James Acres, Pentrebane.

The best five long wool breeding ewes, two years old, which have suckled lambs until July 1st £5, Mr. James Acres, Pentrebane; second best £3, Mr. T. Preece, Wick.

The best short wool ram £3, J. M. Traherne, Esq.

The best yearling short wool ram £3, J. M. Traherne, Esq.; second best £2, John Garsed, Esq.

The best five breeding ewes, short wool, which have suckled lambs until July 1st £5, G. M. Traherne, Esq.

PIGS.

The best sow with pigs or in farrow, of any large breed £2, Mr. Thos. Thomas, St. Hilary.

The best ditto, small breed £2, John Homfray, Esq.

The best boar, small breed £2, John Homfray, Esq.

HORSES.

The best stallion, not exceeding ten years old, for the general purposes of husbandry; and which shall have covered in the county during the season of 1857 £3, Mr. Wm. Colson, Cardiff.

The best mare and foal, for the general purposes of husbandry £5, Rev. W. H. Beever; second best £3, Mr. William Lowrie, Wenvoe.

The best two year old gelding or mare, for the general purposes of husbandry £3, Mr. H. Yorath, Molton.

The best two year old gelding or mare, for hunting or coach purposes £3, Thos. Goddard, Esq.

The best yearling colt or filly, for hunting or coach purposes £2, Mr. Thomas, St. Hilary.

The best yearling colt or filly, for the general purposes of husbandry £2, Messrs. Llewellin and Henry Thomas, Tydraw.

THE DINNER

Took place at the Bear Inn, Cowbridge. It was a substantial repast, and the manner in which it was served, proved that the host and hostess are quite alive to the importance of a good dinner on such occasions, whilst equally reflected credit upon Mr. and Mrs. Morgans' skill as public caterers.

The chair was occupied by the President of the society, Sir Charles Morgan, Bart., supported on the right by J. Bruce Pryce, Esq., and on the left by the Rev. R. Tyler. The company numbered about one hundred.

The usual toasts being given, and the complimentary ones,

Mr. GODDARD, in replying to the health of the "Successful competitors," said, in reference to the general competitors—It was true that he had received a prize for a colt, but he had not much stock to compete, but if he was equally successful with stock as he had been with his colt, they might then give him credit for being a good judge. He thought the show of the day was most satisfactory, especially in one or two particulars. He was very much struck with the remarks of Mr. Bruce Pryce in reference to gentlemen farmers taking away the prizes at these shows. Such must continue to be the case until some more of the tenant farmers came forward to compete with them; and it had struck him why more tenant farmers do not compete was, because it was imagined that a certain amount of disgrace would attach to them if they were beaten. If, however, they had a creditable animal, it would be a great deal more satisfactory (even if they were beaten) to exhibit it than to let the prizes be always carried away by Mr. Thomas of St. Hillray, or Mr. Thomas of Tydraw, or such gentlemen. Gentlemen farmers were not supposed to have all the knowledge; they had a certain amount in the breed and rearing of stock, &c., and had the pocket to bring the animals to perfection; but if the tenant would only go to the expense of getting good and proper food—brought his knowledge to bear in the production of good animals, in all probability they would contain many points not found in the animals exhibited by the gentleman farmer, and they would, at all events, see a better class of animals exhibited by the tenant farmer than was now the case. Mr. Goddard concluded by hoping that his hearers would consider what he had said, and that next year they would see the tenant farmers competing largely for the various prizes offered by this society.

Mr. J. BRUCE PRYCE then proposed the health of Mr. C. C. Williams, of Roath, who for many years had offered premiums for useful agricultural implements.

Mr. WILLIAMS in reply said, that he had scarcely anticipated that his health would have been drunk for merely giving a money reward for agricultural implements exhibited at the shows of this society. It was now many years since when the thought struck him whether it was possible that this country

could compete with others in the production of corn, unless they in some way economised labour. It was now supposed, and the supposition was a pretty correct one, that each individual consumed a quarter of corn annually. They knew from recent returns that they raised about 13 millions of quarters of corn annually, and the population of the country was between 18 and 19 millions, so that there were at least 4½ to 5 millions more of quarters of corn to be introduced into this country to supply the consumption. It was also a well-known fact that there were upwards of 300,000 animals imported into this country. How, then, was it possible that they could compete with this unless they encouraged the breeding of stock, and unless they economised labour in the production of corn? It was with this view that for many years past he had given (not only in this place, but at other agricultural meetings) prizes for improvements in agricultural implements. They had now to contend with extreme prices of labour, and unless they could economise that labour, it was evident they could not compete with those who sent corn into this country. They must also remember that they were an insular country, consequently could only use a certain amount of land. Large portions of land were being taken out for the purposes of the railway, and in the neighbourhood of populous towns for the purposes of building; so they had only the land not yet cultivated, and a cheaper supply of labour to fill up the vacuum which was caused in the production of corn from the causes which he had alluded to. He did not know that he could lay claim to any merit for giving this premium; he merely did it to encourage the production of useful implements. He was glad to hear that the show in this respect was better than formerly, and he hoped henceforth the premium which he had offered this year would be regularly set down as one to be given by the society (cheers).

The Chairman then gave the health of the Bishop and Clergy of the Diocese, coupling the name of the Rev. R. Tyler.

The Rev. Roper T. Tyler acknowledged the toast, and said, "While he was on his legs he would touch upon another subject, and as the President had coupled his name with the stock, he should like to make one or two observations with respect to it. He had always been a cultivator of shorthorns, as he thought they were particularly well adapted for this country. They knew that butter and cheese had been selling remarkably well of late, and had obtained good prices, and he hoped the proceeds obtained therefrom formed a large item on the favourable side of the farmer's balance-sheet. Well, as far as his experience and opinion went, he found that shorthorns were not only good for the pail, but equally adapted for fattening as the Herefords. He believed, therefore, if farmers would encourage the breed of shorthorns more than they did, they would find them turn out exceedingly favourable. He did not find them delicate, neither were they very despicable animals, as the Chairman had very justly observed. He obtained the best blood which he could, and as his bull had won the prize, he was much at the service of the farmers. He believed that a shorthorn bull would be sure to produce a good animal from almost any cow, and as he had before remarked, they were good animals, not only for the pail but also for fattening, and therefore the breed should be encouraged."

The President shortly after left the chair, and the company soon after separated. We cannot conclude these proceedings without beaing our testimony to the excellent arrangements which had been made and carried out throughout the day. In the show-yards, the distribution of prizes, the dinner, the whole arrangments gave universal satisfaction, exceedingly creditable to the respected Hon. Secretary, Mr. Bradley.

CHESHIRE AGRICULTURAL SOCIETY.

On Thursday, the 17th instant, this society held their anniversary meeting at Macclesfield. It is reported as having been most successful. We extract from the *Chester Chronicle* the following excellent sketch of the show:—

On entering the show-yard a fine display of cattle met the eye; the most conspicuous among the front rank were a Roman bull and two Roman cows, shown by J. B. Glegg, Esq., of Withington, and carrying elegantly-shaped horns measuring six feet across from tip to tip, and possessing a dun-coloured skin, covered with a silky coat of hair. Going along the rails dividing the stock, the visitor would find a fine show of

HORNED CATTLE.

Judges—Mr. Byburn, and Mr. J. Carrington, Croxton Abbey, Alton.

Of bulls there were many specimens in the yard, principally of the short-horn breed. The prize was awarded to a red bull belonging to Mr. Forrest, of Spurstow Hall, the same gentleman who carried off the premium at the last year's show. In dairy cows the show was good, there being several prime animals in the yard, the prize for which was won by Lord Stanley, of Alderley. Of heifers, stirks, and calves, there were plenty shown, and many of them were very good, but still we think the show of horned cattle was in some respects scarcely equal to that of the Nantwich show.

PIGS.

Judges—Mr. Etches, Harley Thorn, and Mr. Turner, Pool Park, Ruthin.

In this department of the show, the great excellence of the meeting was shown. Both in the large and small breed, there were some splendid specimens, either for breeding or for fattening purposes, and some of the litters were extremely fine.

SHEEP.

Judges—Mr. Etches, Harley Thorn, and Mr. Turnor, Pool Park, Ruthin.

The show of sheep was not large, and the quality of those in the pens was not of the first character.

HORSES.

Judges—Mr. Leech, Wall Hill, Leek, and Mr. Hopwood, Rowney.

The show of horses was large, and comprised several good useful heavy stallions for agricultural purposes. The show of brood mares with foals was small, there being only five in the yard. The two-year-olds were numerous, and many of them were fine, giving the judges considerable trouble in deciding the award. Yearlings were seemingly ignored at the show.

ROOTS, MANURES, &c.

The show of roots was small, and the specimens were far below many that were entered for competition at Frodsham and Warrington.

On our inspection of the various objects of interest in the show-yard, we saw none of greater importance than what was exhibited at Stand No. 19 ("the Lancashire Manure Company, Widnes, near Warrington"), where were exhibited samples of food, both for man and beast, in the shape of wheat, oats, barley, beans, turnips, mangolds, and other vegetables. These specimens were truly astonishing from the enormous size to which some of the roots, &c., had attained; alongside were exhibited the manures from which they had been grown, on the farms of the Right Hon. the Earl of Derby, John Ireland Blackburne, Esq., of Hale Hall, and other leading agriculturists in Lancashire.

IMPLEMENTS.

This important department of agriculture occupied a very considerable portion of the show-yard; and many very superior machines were exhibited. Makers seem to be endeavouring to combine cheapness with usefulness, and we heard many exclamations of surprise from hard-faced farmers as to the price demanded for various articles: this will soon perfect the revolution among agriculturists, and make England incomparably superior as an agricultural county.

FARMERS' INCOME TAX.

Sir,—I am desirous of calling the attention of your Agricultural friends, by means of your wide-spreading Journal, to the above matter, because, in the present aspect of our Indian affairs, it is not impossible that, before the termination of the three years for which the new Assessment of Property and Income Tax is now in course of preparation, we may again have it increased; in which case, anything which tends unduly to enhance its amount becomes matter of consideration to the Farmer.

It is a rule with Tax-Officers, to add the Tithe Rent-Charge, whenever they can ascertain its amount, to the Rent or Annual Value of the land, for the purpose of calculating the assessment for Schedule B; which addition, I contend, is clearly not authorized by the Act of Parliament.

In order to bring anything within the scope of Schedule B, there must be an OCCUPATION of it: this is the very life and soul of Schedule B. In the ordinary case —of tithe Rent-charge being paid to the owner of it— there is no Occupation of anything besides the Land, on the part of the Farmer. In some cases, it is true, the Farmer rents or occupies the Rent-charge; and, in such case, he is liable to Schedule B in respect of the rent of it: but these are exceptional cases. It is contended by the Tax-Officers, however, that there is an Occupation of the Tithes themselves, because a Rent-charge is paid, which implies an Occupation.

The reply to this is, that the tithes are *extinguished* by the Tithe Commutation Acts; and "Rent-Charge" is a mere *name* given to a payment in lieu of them, from which no Profit does or can accrue to the occupier of the land; and differs widely from the old Compositions, which were, doubtless, paid in respect of an actual occupation of the Tithes themselves, from which Occupation Profit was assumed to be derived. Profit from Occupation, then, is the thing to be taxed. But where there is no Occupation of the Rent-charge, there can arise no Profit, to be taxed. To this argument the Inland Revenue Office has been unable to furnish an answer.

The rule for calculating the assessment to Schedule B is very simple—viz.: Take the Rent (or, in case of a person occupying his own land, the Annual Value), and deduct from it one-eighth (for the tithe); then calculate 3½d. in the £ on the remainder; and that, and no more, is the amount at which the Occupier ought to be assessed to Schedule B.

In case any Farmer should find, in the Notice of assessment, and of the day fixed for Appeals, with which he ought in fairness to be (but is not always) served, that he is assessed to Schedule B at a sum exceeding the amount calculated according to the above rule, he should at once give notice of appeal to the Tax-Surveyor of his District, and attend the Appeal Meeting, with evidence (such as his Lease or Agreement, if he have any; or, otherwise, the best proof he can give, by himself or others, of the fair annual value of his land) that the assessment has been calculated upon some amount which exceeds the rent or annual value of the land; and I cannot conceive upon what ground relief could be refused to him.

The addition of the tithe rent-charge to his rent may, in some cases, increase a Farmer's Income Tax by one-third of its proper amount—an excess too great to be voluntarily passed over in silence.

Amicus.

P.S. If your agricultural contemporaries, in Town and Country, would reprint the above, it would bring the subject under the notice of Farmers generally.

A NEW BREED OF SHEEP.

Sir,—As all tenant farmers ought to prefer profit to ornament, fashion, and mania, and as all actual merit is profit, in breeding and feeding cattle and sheep, a friend of mine, who has attended Smithfield Market for more than half-a-century—which has taken off the prejudice against any kind of sheep that have weight, sufficient wool, plenty of lean flesh, and tendency to early maturity—this old and practical friend proposes a new breed of sheep, by putting a heavy-wooled Bakewell-framed Lincoln ram to gigantic Hampshire-down ewes, which would increase the weight of wool of the Down, and not decrease the weight of mutton, but increase both wool and mutton, and not lessen the lean flesh of the Down. And to keep up the size and weight of wool and mutton after the first cross, my friend proposes to put half-bred Down and Lincoln to half-bred Down and Lincoln, but not brother to sister. If you mean to breed large-sized sheep, breed from the longest-featured male sheep, with a Bakewell frame; and if you mean to breed small-sized sheep, breed from the smallest and shortest-featured male sheep, as giants do not produce dwarfs, nor dwarfs giants. We do not see the head and ears of a giant upon the body of a dwarf, nor the head and ears of a dwarf upon the body of a giant. "When I say a giant sheep, I do not mean," says my friend, "a giant sheep of fat flesh: I mean a gigantic sheep in frame when in a lean state. Whether large sheep or small are the most profitable I leave it for every man to enjoy his own opinion—

'A man convinced against his will
Is of the same opinion still.'

The generality of farmers who have been breeding small sheep are looking out for larger rams with more wool upon them, to increase the weight of wool, mutton, and lean flesh. But in my opinion (says the old and experienced gentleman) a sheep of the true Bakewell frame or cast, with a Lincolnshire coat of wool on his back, is never too large for profit. But in trying to obtain a Lincoln fleece upon a gigantic sheep, mind you do not lose the handsome Bakewell mould." But my friend finished by saying that upon all land where clover and turnips can be produced the Lincolnshire long-wools are the most profitable; and he does not see any reason why a Down should not be in the form or cast of a Bakewell Leicester. And he conceives it possible to breed Downs with a Lincolnshire coat of wool on their backs, at the same time increasing the weight of mutton of the Down as well as the fleece.

Peterborough, Sept. 9. Samuel Arnsby.

HIGH FARMING NOT SUITABLE TO SOME LOCALITIES.—Dr. De Vitrie, in proposing "The successful competitors" (at the South Tyne Agricultural Society's meeting), said: "The society was as yet limited in its extent, embracing only a particular district, and that district in a high locality; but, though in a high district, there was not necessarily high farming. In fact, high farming, in the agricultural acceptation of the term, was not found to answer in that locality; but, whilst high farming was not practised by themselves, they would find that, by treading cautiously in the steps of those who followed high farming in cattle, selecting from their stock, and carefully noting the result of their experiments, they would soon arrive at the proper standard for the district. It was once his fortune to live next-door to the highest stock-farmer in the United Kingdom—a gentleman who, within three years, had sold three bulls for 1,000 guineas a-piece, and who had not an animal in the whole of his stock worth less than fifty guineas. It would be an unspeakable pleasure to some of them, he knew, not only to see, but to handle those animals. They would find them soft and elastic in their various 'points'—so much so, that they reminded him of the famous crinoline of the present day—very elastic, with plenty of room. There were farmers of another class—one not far from that place—who, not being stock-farmers, farmed for dairy and agricultural purposes, and who, nevertheless, farmed upon scientific principles.

The gentleman to whom he referred not only weighed his animals, but their food also. He adapted the food to the beast, and selected that which was of the best quality for the purpose. He knew that rapecake was much better than oilcake for milk and butter purposes; and, were he asked to go into the question chemically, he could tell the reason why. He would tell them that, unless they procured the best Hamburgh cake, avoiding the East India cake, they would not succeed; and that, when they did obtain the right food, and administered it in the right way, by giving them small portions at a time during the day, they would find the quality of their butter and cheese very materially improved. Even in hot weather, such a course secured fine firm butter, such as the dairymaid loved to look at, and not the soft, flabby stuff which was too often produced. He employed all the scientific agents he could think of, giving certain animals such proportions as were suitable to their temperaments; and, what was more to the purpose, he made it pay. But it was quite possible that agriculturists generally, who merely pursued farming for a living, should not become scientific farmers; nor was it desirable. In the same way, no man could always bear to dine off dishes dressed by scientific cooks upon scientific principles; but that was no reason why they should not occasionally have something better than ordinary fare. If they could not afford to buy all the agricultural literature of the day, he would recommend them to join some club where the principal periodicals and works upon agriculture could be read; for they all knew how effectually the press disseminated useful knowledge of every description. By this means, they could acquire all the important results of the best farming in the kingdom, and adapt just such portions as were applicable to their wants. It would not be necessary to have the soil of the locality analyzed, in order to ascertain what treatment would be best adapted to its cultivation; but they would be able to see at once what was wanted, by the peculiar herbage of the place. Then they could set to work at once, and apply what remedies were required. They would learn that common "muck" was most suitable for grass-lands. He would say that with a limitation; for he was aware that, although it was the best fertilizer of grass-lands, it was not the best adapted for the produce of good milk and butter. And why was that? He would appeal to his friend Mr. Clarke, who had taken so active a part in organizing their society, to bear him out in the conclusion he drew. It was well known that the dairy-cow extracted, with its food, from the land, the phosphates which were a component part, and which formed an essential ingredient, of butter: consequently, if the cow could not get it, it did not pass off in the shape of butter; so that, if the manure were unnatural, the produce would fall off in quality, and dressings of lime would be necessary to restore the grass to its proper quality.

CALENDAR OF AGRICULTURE.

This is the general month for sowing wheat. Plough the fallow lands quickly, and sow without delay; steep the seed in stale urine, or in a very strong solution of common salt; skim off the light grains, and encrust with quicklime, and sow immediately by the hand or drill. Put gates and fences in repair, and shut up the sown fields for the winter.

Prepare, by fallowing, the lands intended to be planted with early green crops.

Raise potatoes from the ground in dry weather; pull by hand, and carry the haulm to the dungyards. Dig the crop of tubers with the dung-forks, as the narrow points of the implement pierce the ground, and leave holes and openings for the permeation of air and water. Carry the potatoes to a dry place, form the heap longitudinally and about four feet high, cover with turf and earth, and thatch with straw. Secure mangel wurzel, carrots, and parsnips in a similar way, and remove from clayey loams the crops of rutabaga, in order that the land be sown with wheat. Give the tops of Swedish turnips and of beet-root to cattle and sheep—moderately at one time, in order to prevent hoving. Plant potatoes with farmyard dung on fallowed lands; drill the ground widely and deeply, to protect the sets from the frost.

Put rams to the ewes—one to fifty—and place each lot in a separate field; give to eat turnip-tops and of beet, which will much promote the salacity. All aged, and unsightly, and ill-shaped animals, and bad thrivers, and those ewes that missed lamb last year, must be rejected from the purpose of breeding, and the place supplied with the same number drawn from the ewe lambs now eighteen months old. Much care and discrimination must be exercised in assorting qualities for the purpose of propagation. Mark the rams on the brisket with red paint or black pigment, which will mark the ewes on the rump, and enable the shepherd to put marks on the ewes regularly as they are impregnated, during every fortnight, and are very useful in the spring in housing the ewes for lambing, and in preventing any lambs being dropped unseen. Ewes must be raised into good condition for the tupping season.

Sheep are smeared with some liquid ointment during this month, to kill vermin, and to prevent rubbing and tearing the fleece; tobacco liquor is much used, mixed with a small quantity of spirit of tar. The most approved mode dips the animal in Bigg's composition dissolved in water, dipping the sheep for a few minutes, and then drying them on bare clean ground; it kills all vermin, and very much promotes the growth of the wool.

The lambs will require the assistance of artificial food in the end of this month, as the grass will begin to fail. If the turnip lands are dry in nature, confine the animals on spaces of the crop divided by hurdles, and give fresh spaces as the others are finished; but if the lands are wet and poachy, carry the turnips daily for the lambs to a dry stubble or grass field, and cut off the roots on the field where they grow: the sheep intended to be fattened will require turnips in a similar way.

The oxen that are foremost in condition must be tied to stakes in stalls singly, or lodged in yards two or four together, and amply supplied with turnips, with the tops and roots cut off. Give the tops to the store ewes or young cattle; the latter must be placed in yards six or eight together, and carefully fed and well littered.

Feed milch cows with cabbages, the tops of turnips, and of beet-root; give hay and straw in chaff, or steam the roots and chaff in mixture; juicy food is indispensable for the secretion of milk.

Begin to feed hogs for bacon; use steamed food of meals and roots mixed, and finish with hard corn.

Get the manure pit in readiness; fill it with earthy and vegetable matters, in order to absorb the urinary liquid, and clean out all the culverts that lead from the cattle yards to the pit: the absorption of urine by earthy substances is the best use of liquid matters. Tanks should be roofed over, as the exclusion of light is found to promote putrefaction. .

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR SEPTEMBER.

With the exception of a few patches of grain remaining out in the most northern counties, harvest work was brought to a general close in this country by the 10th of this month, one of the earliest periods almost on record. Although the quantity of new wheat as yet thrashed out is by no means extensive, we are enabled to form positive conclusions in reference to its yield. That it is the best, taken in the aggregate, almost ever remembered, is admitted by the growers themselves; and this must be evident when we state that both in Essex and Kent, the growth has come up to 6½ qrs. to the acre. This extensive produce has led many persons to the conclusion that prices must of necessity rule considerably lower, and that, as our advices from all parts of the globe are favourable as regards the wheat crop, we shall receive enormous importations of grain during the remainder of the year. We freely admit that our farmers have now an immense amount of food on hand; but that is no positive proof that prices will run down to a very low point, because we must bear in mind that consumption in this country is enormous, and that consequently it is not very probable that produce will be forced for sale, unless at remunerative prices. No doubt foreign importations will exercise a ruling influence upon value, but we see no reason to anticipate more than average supplies from any quarter. The imports from the north will, no doubt, be equal to last season, and the commercial panic in America may lead to increased shipments. At present, however, there is no margin of profit for speculators, and our impression is that the bulk of our importations from the United States will be received as exchange operations, arising from the extreme difficulty on the part of the merchants at New York in obtaining specie, except at ruinous rates. The general trade of the United Kingdom, notwithstanding that decreased shipments of manufactured goods have lately been made both to India and America, is in a most healthy state, and we see no reason whatever to look forward to any great depression in the value of wheat.

Although the barley crop has not turned out quite so well as was at one time anticipated, some very fine samples have made their appearance both at Mark Lane and in the provincial markets. The arrivals from abroad have been seasonably large; nevertheless, the trade has continued steady, though on rather easier terms. The growth of oats, beans, and peas appears to have been an average one, and the quality of samples is turning out tolerably fine.

Scarcely any old English wheat has made its appearance in any of our markets, but this fact must not be taken as evidence that the quantity on hand is limited. We believe that there is above an average supply on hand, but no doubt the greater portion of it will be held over, as very little is now wanted for mixing purposes.

There is now much less competition for food in the Black Sea than for many years past. Scarcely any wheat has of late been purchased at Odessa, or in the Turkish provinces, on French account; consequently the outflow of food will be chiefly directed to this country. We are inclined to think, however, that much less produce will be forwarded this year than in 1856 or 1855.

Most conflicting accounts have come to hand in reference to the potato crop. Many growers have intimated that nearly all kinds of potatoes are extensively diseased, and others state that the weight per acre is comparatively trifling. These and similar statements invariably appear in print at this time of year, and we believe that not a few of them are written for the purpose of enhancing the value of the better kinds of food. Certainly, up to this time, our markets have exhibited large supplies in excellent condition; and in what may be termed our potato districts, the produce is very great.

The late fine rains, aided by a comparatively high temperature, have produced a large supply of grass in the pastures. Stock has therefore fared well, and store and half-fat animals have further advanced in price. Most of our markets have been scantily supplied, and the cattle trade has ruled brisk, on higher terms.

There has been a full average business doing in nearly all kinds of wool, at high currencies. During the first eight months of the present year the total imports of foreign and colonial wool into the United Kingdom were 297,059 bales, against 280,856 bales in the corresponding period in 1856. The increase would have been much greater had it not been that a most serious epidemic has broken out amongst sheep in the neighbourhood of Sydney, and which appears to have been most fatal in its effects.

The turnip and beet crops are looking well, and promise a very large return. This is an important matter for the grazier, whose prospects, as regards a supply of food, are cheering.

Linseed and rapeseed, as well as cakes, have commanded less attention; nevertheless, we have no material change to notice in their value. The imports continue on a very moderate scale; and it is apprehended that, owing to the mutiny in India, future arrivals will be limited.

In a general point of view our advices from Ireland are not satisfactory. The produce of the oat and other crops does not appear to exceed an average, and it is intimated that the surplus for shipment will be comparatively small. Along the coast the potato disease has been general, and heavy losses have been sustained; but, in the northern counties, the crop is turning up in fair condition. The old stock of oats is now wholly exhausted.

Throughout Scotland harvest work has suffered some serious interruptions from the weather, and much of the wheat has become sprouted from long exposure in the fields. The actual quantity grown is fully up to an average, and the yield of other produce is tolerably good. Potatoes are slightly diseased in some quarters; but the shipments to the south, though they have sold at low prices, have kept remarkably well.

Owing to their great abundance, both hay and straw have sold heavily. The top price of meadow hay is £4 4s., of clover £5 5s., and of straw £1 10s. per load.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Although the leading markets have been well supplied with beasts during nearly the whole of the month, the demand for that description of stock has ruled steady, and prices have advanced about 4d. per 8 lbs. The improvement in value, however, is chiefly confined to Scots and other superior breeds, the numbers of which have been small, compared with the total supplies exhibited. An abundant quantity of grass in the pastures has induced not a few of the graziers to withhold a portion of their supplies of sheep, which, however, have mostly appeared in very middling condition. The total number shown in the Metropolitan Market has been only 127,715 head, against 132,014 ditto in the corresponding month last year. This falling off in the arrivals has resulted in a very active demand, at a further improvement in value of fully 4d. per 8 lbs. It may be remarked that the stock fairs have been very extensively supplied, and that prices have ruled much higher than in the general run of years. The present high value of tallow—59s. per cwt.—and the extreme quotations at which rough fat has been selling—3s. 5d. and 3s. 2½d. per 8 lbs.—have no doubt exercised great influence upon the graziers and feeders of both beasts and sheep. Very few lambs have made their appearance, yet the whole on offer have changed hands at very high figures—6s. 4d. per 8 lbs. having been paid for Down qualities. Calves, too, as well as pigs, have sold briskly at enhanced currencies.

Much discussion has sprung up in various quarters in reference to the future value of live stock in this country. We can hardly anticipate much higher prices than those now current, because a further rise would check consumption and produce a falling-off in the demand; but our impression is that there is no reason to look forward to a serious fall in the quotations of either beasts or sheep.

On most stock farms there is now an abundance of food. The turnip and beet crops are looking well, and there appears to be no prospect of anything like scarcity.

Our advices from Holland are to the effect that the production of stock is progressing steadily, yet it is wholly inadequate to meet the demand. In the general weight and condition of the Dutch sheep lately received in London, we have observed a great improvement, and we may state that numbers of them have sold as high as £3 each. The following return shows the imports into London in the course of the month:—

Beasts	7,346	head.
Sheep	24,090	,,
Lambs	198	,,
Calves	1,953	,,
Pigs	2,007	,,

IMPORTS AT CORRESPONDING PERIODS.

Sept.	Beasts.	Sheep.	Lambs.	Calves.	Pigs.
1851....	6,177	28,556	2,075	2,518	1,994
1852....	6,619	34,759	1,132	2,388	1,847
1853....	8,372	28,845	273	2,535	1,498
1854....	7,805	26,230	748	1,894	2,231
1855....	7,161	22,744	613	1,646	2,266
1856....	7,084	20,605	3,000	2,772	1,559

The value of meat still rules very high in France, and the abolition of the butchers' monopoly in Paris is likely to increase the competition for live stock, which continues to be drawn in large numbers both from Holland and Belgium.

The total supplies of stock shown in the London market have been as follows:—

Beasts	25,734	head.
Cows	522	,,
Sheep and lambs	127,715	,,
Calves	2,220	,,
Pigs	2,585	,,

COMPARISON OF SUPPLIES.

Sept.	Beasts.	Cows.	Sheep and Lambs.	Calves.	Pigs.
1851....	23,007	600	169,390	2,230	3,447
1852....	24,911	490	148,680	2,934	2,980
1853....	27,063	518	157,750	3,037	3,170
1854....	24,796	542	174,171	2,730	3,465
1855....	24,667	540	152,120	2,477	3,921
1856....	24,002	485	132,014	2,[illegible]52	2,800

From Lincolnshire, Leicestershire, and Northamptonshire 11,500 shorthorns have come to hand; the receipts from other parts of England have amounted to 2,000 of various breeds; from Scotland, under 100 Scots have reached us; but from Ireland, 1,758 oxen have cone to hand *via* Liverpool.

Beef has sold at from 3s. 2d. to 5s.; mutton, 3s. 4d. to 5s. 6d.; veal, 3s. 4d. to 5s. 2d.; pork, 4s to 5s. 2d. per 8 lbs., to sink the offal.

COMPARISON OF PRICES.

	Sept., 1856.						Sept., 1855.				
	s.	d.		s.	d.		s.	d.		s.	d.
Beef, from	3	0	to	4	10	...	3	4	to	5	0
Mutton	3	8	—	5	2	...	3	4	—	5	0
Veal	3	8	—	4	10	...	3	10	—	5	2
Pork	3	6	—	4	8	...	3	6	—	4	6

	Sept., 1854.						Sept., 1853.				
	s.	d.		s.	d.		s.	d.		s.	d.
Beef, from	3	0	to	5	0	....	2	10	to	4	6
Mutton	3	0	—	5	0	....	3	2	—	5	2
Veal	2	10	—	4	4	....	3	6	—	4	8
Pork	3	4	—	4	8	....	3	4	—	5	2

The supplies of each kind of meat on sale in Newgate and Leadenhall markets have been tolerably good, and the trade generally has ruled steady on higher terms. Beef has realized 3s. 2d. to 4s. 6d.; mutton, 3s. 4d. to 4s. 10d.; veal, 3s. 4d. to 4s. 6d.; pork, 3s. 6d. to 5s. 4d. per 8lbs. by the carcase.

MID-KENT.

As we are now drawing towards the close of summer, it is only fair to take a retrospect of the past; and in the first place we may say that we have had the season earlier throughout than for some years past. We have also had it warmer and drier than the average—the months of June and August being especially hot months, February a remarkably dry one, and May and July more than usually so, though not so dry as February. The result has been that wheat, especially autumn-sown, has been very good, oats and barley only an average, and peas indifferent; but the quantities grown of the last-named are small—that wheat, hops, and green crops are of more importance to us. Hops are now in the course of being picked, and are generally good in quality where there are any; but the crop is so variable that it is difficult to come to any conclusion beyond that the quality may be expected good, and those who have a crop at all, in many instances, have a good one. The weather, however, has been against the picking, although the hops have not taken any serious harm; but where there are many, and the picking will be necessarily prolonged to the beginning of October, there is every likelihood of much loss arising from the delay. In a general way the first pickings have been at the rate of from 70 to 80 bushels to the cwt., but as the season advances a less quantity will do. We shall, however, most likely meet with some reverse during that period. A high wind is most to be feared. Of fruit, filberts are the only things we have in any quantity, and they fetch but little money. Apples seem more plentiful in other neighbourhoods than with us. Pears are better, but plums have been thin. Most of the growers of these have hurried them on the market, prior to commencing hop picking, which absorbs the attention of all. Turnips, owing to the dry weather at the time of sowing, will be scarce, and where they have grown they are uneven. Potatoes, we are sorry to say, have become very much diseased the last three weeks, more especially the Regents and other late kinds. And we have been very short of feed in our meadows until the last few days: the ample rains we have had, will, it is thought, carry us through the season in that respect; but the lack of rain and consequent shortcomings of all our after-grass, even clover being almost scorched, have been a sad drawback to all our young stock and out-door fattening bullocks; that we shall have plenty for the time to come will in no way compensate for what we have been deficient. Taking altogether, perhaps we have no particular reason to complain. Our neighbours in Sussex and the Weald of Kent will, we fear, have more cause to do so, as we are told their hops are very bad; and with them, as with us, these are the all-important crop.

WEST GLOUCESTERSHIRE.

The bulk of the grain in this district has been now harvested fully three weeks, and, with few exceptions, in admirable condition. A more glorious summer than the past has not been known for many years. With fine weather for the hay harvest, there were intervals of rain, in sufficient quantities to impart vigour to all the earth's productions; but its continuance was never so protracted as to occasion injury. And so the weather continued throughout the ingathering of the corn. With every allowance for the variations of rain-fall throughout the kingdom, representations of damaged grain fall upon the ear of the inhabitants of Gloucestershire with impressions bordering upon incredulity. Finer samples of wheat than the bulk of those which are offered in the markets of this connty, were never known. The weight is above the average, varying from 62 to 65lbs. per bushel. In some instances, we hear of enormous crops having been grown, amounting to 60 bushels on the acre. There are, of course, exceptional cases of production; but there is, undoubtedly, above an average, which may be estimated at 4 qrs. per acre. The samples of barley are, in some cases, stained; nevertheless, there is much of good quality. Peas and beans come to market in fine condition; and oats, though good in quality, are scarcely so productive, comparatively, as the other kinds of grain. The potato crops are large, and the tubers very fine; but in many instances the disease has affected them considerably. Cider-making is in full operation; and the crop of fruit, without being abundant, is satisfactory. It varies, however, considerably: in some orchards the trees are loaded to profusion, while others have very little. The early ingathering of the harvest, the favourable weather that has followed, and the conviction of the very great importance of autumn-culture, when the land is in good order, have set the implements to work with great energy. A more propitious time for cleaning land that may happen to be foul seldom occurs at this season of the year; and there are few indeed who have not taken advantage of it. Much of the land is already prepared for wheat-sowing, in the finest possible order, though the final operation must necessarily be postponed. The root crops are good, with the exception of slight indications of mildew on the swedes, which a little rain will very probably rectify. The reports of complaints among the cattle in South Wales are startling; but, as yet, there are no symptoms of disease in this quarter. The make of cheese will be about an average one—perhaps a shade under rather than over. The dry weather, which throughout the summer was prolonged, had the effect of arresting the growth of grass; and, consequently, a partial decrease of milk ensued. The fairs and cattle markets support the prices of stock of all kinds, agricultural horses excepted, in which there is a decline in value, while roadsters and animals of good character are difficult to procure.—Sept. 26.

SOUTH LINCOLNSHIRE.

It is always important to give a correct report of every district, but it is of higher importance immediately subsequent to harvest. We, therefore, resume our office; and shall endeavour very briefly to state the exact agricultural position of this district at the present time. We have had a favourable harvest, with the exception of a few days of partial rain at the commencement. This has caused some sprouted samples; it speedily, however, cleared away, and was followed by most brilliant weather, so that the latter harvest is secured in admirable order, and promises a full average yield of wheat, and a fair average of barley: but oats, beans, and peas are a short crop, but of good quality. Wheat is of varied quality, but will weigh better than last year. The quantity of straw this season is very short; we have seldom seen such scanty stack-yards. The grazing lands never looked better; they are "full of grass," and the stock for the most part doing well. Eddishes are remarkably fine. It has been one of the most suitable seasons ever known for autumn culture; so that Biddle, and Bentall, and Coleman, with every minor scarifier, has been in full requisition: and the universal desire has been, "Oh that steam cultivation could be made to bear upon our lands now!" Most of the lands intended for wheat have undergone an autumn fallow. The potato crop is in the most unsatisfactory state, and much injury is daily in progress: some state half the crop to be bad. We also regret to state that the turnip crop is most seriously injured by mildew; scarcely a field of Swedish turnips have escaped, and many acres are already rotten. The common varieties are better; but still far from good. Mangel wurzel is again a capital crop. Cole-seed too young, and not likely to be very lasting. Store stock of all kinds selling well.—Sept. 26.

SOMERSETSHIRE.

The last few hot clear sunny days have enabled farmers to bring even the out-of-season crops to a satisfactory conclusion. The clover secured lately appears of better quality and more productive than the earlier harvested. During the whole harvesting a better opportunity for well securing the various crops has seldom been witnessed. There are but few complaints of disappointment in yield: often more has been realized than calculated by the seller. We do not think, on the whole, the red wheats are heavy, but they are all sound, and less otherwise inferior samples to last year. A good deal has been thrashed; but lately more barley, vetches, and beans have been thrashed. The supplies of wheat have been very irregular, and prices uneven during the past month; 7s. 6d. to 7s. 9d. for 63 to 64 lbs. white wheat the highest figures, and 7s. to 7s. 3d. the lowest; red 7s. 3d. to 7s. 6d., to 6s. 9d. and 7s. for the best; inferior qualities of both being a good deal under. Barleys are said not to work well; malting 5s. 3d. to 5s. 9d.; grinding, little thrashed. Beans are very dry and hard, and sell pretty steadily at 5s. 3d. to 5s. 4d. small, 68lb., and 5s. to 5s. 1d. large, 64 to 66 lbs. per bushel. Vetches have come down from 6s. 6d. to 5s. and 5s. 3d., are very plentiful, a good crop, and a great many saved. Oats are from 22s. to 24s. (41 to 42 lbs. per bush.) per qr. Potatoes not half a crop; good-sized potatoes selling at 9s. to 10s. per 240lbs. We have a fair crop of mangel, which will be much helped by the rains. Swedes, although mildewed, have grown lately. Water is short, but on our best lands the pasture has been abundant; the price of poor stock shows this. Sheep have advanced, and cattle have fully maintained their value. There has been something of a decline in the price of beef, which comes more plentiful to market. Mutton keeps the price better. Beef 11s. to 12s. per score (sink); mutton 6½d. to 7d. per lb.—high for this time of the year. Cheese does not decline in price, without much briskness. Butter high, 1s. 2d. to 1s. 3d. per lb. Little doing in wool, from 1s. 6d. to 1s. 7d., extra 1s. 8d. per lb. Pig stock lower; more than the demand brought to market. Bacon 8d. to 9d. per lb.

NORTH NORTHUMBERLAND.

In our last letter from this district, 31st of July, we anticipated harvest to commence about the 20th ultimo, and in partial instances it was begun on early situations a few days earlier than that date. August proved altogether, as to weather, very unsettled. First few days fine; subsequently, from the 6th to the 13th, inclusive, a continuance of rain, dense fog, and thunder-storm, followed by hot, sultry, close weather, scarcely a breath of air moving a leaf. Wheat and other cereals became ripe, with a bad rusty tinge; potatoes and beans became black, the cobweb overhanging the leaf day and night; and by the end of the month the stems were nearly or entirely stripped of foliage. On Monday, the 24th of August, the atmosphere cleared out; corn ripe for the sickle on late situations, equal with more favoured localities; reapers in great request, and fees ruled unusually high. With a full average quantum of assistants from the "Green Isle," large breadths of oats were cut down by Saturday evening, wheat and barley being generally a few days later than the oats with us this season. Monday 31st and September 1st splendid harvest days, and every available team carting to the stack. From the 2nd up to the 1[illegible]th, a continuance of rain and fog, with warm, humid atmosphere, when no vigilance, ingenuity, or spreading out of the sheaf could prevent sprouting; and we regret to say very great damage has been sustained over fully nine-tenths of the wheat and barley crops of this northern county. Since the latter day (15th) the weather has been all that the husbandman could wish; and all has been got to the stack in fine condition for keeping, with the exceptions referred to. Great energy and vigilance have been apparent on all sides. The expense of laying-out, re-tying, and separating the sprouted from the sound sheaves, shedding-out of grain on the field, are all a drawback. Few fields of wheat have been cleared without twice going over—first carrying the sound side of the stook, leaving all matted sheaves to collect for a separate stack. Very small patches yet remain to reap, but the great bulk of our cereals are under thatch, and when put together in the rick-yards present a fair average bulk. As to the yield, no sound opinion can yet be given, time having almost exclusively been taken up, in saving the crop on the field: our sample will be very various—fine down to very inferior. Beans, which promised well early, are reaping a very meagre crop: thinly podded, bare sticks—without leaf. Peas, some loss by shedding-out, and crop generally light; full of annual weed. Potatoes quite withered down, and great complaints of disease, being apparently quite ready for lifting. Garden varieties about half-gone by the old *trouble*. Turnips: the swedes are generally good, although instances of mildew are visible; other varieties, various. Where early sown with a sufficiency of stimulating manures, some very splendid crops; where late, they have been battered by the heavy thunder-showers, and will make a very poor return. Pasturage has been abundant during the summer months; still the sheep flocks have fattened little, the fly having teased them perpetually: consequently hundreds of the fleecy tribe that usually leave pasture for the shambles will go to the market as winter stores, to graze on turnips until fat. Cattle have done better on grass. We hope, therefore, at last to maintain our position, by upholding the credit of the Border counties at the Christmas show of fat beeves. Our meat market continues very firm for all grades of vendable fat stock; and while the great consumers continue to be fully employed, remunerative returns are likely to be the result. Wool has also gone off at a high figure: a real boon to the farmer carrying on a mixed husbandry, the returns from last year's corn crop having made a poor figure in the ledger. On bare unsound land, where little or no grazing stock are kept, we cannot foresee where rent can be realized. Harvest wages have ruled from 3s. to 3s. 6d. per day, with full rations on working days; and on most farms the labourer has made twenty to twenty-four days at such rates. Females averaging 3s., without board, for the full harvest. This morning threatening for more rain. Southerly wind, hazy atmosphere, and barometer falling.—Sept. 26.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

AYLESBURY NEW MICHAELMAS FAIR (Friday last).—The fair was rather thinly supplied with stock, but the trade was active in all kinds. There was a good demand for first-rate horses, and a good many changed hands at high prices, the best cart-horses realizing from £26 to £50 each, and nags sold at equally high rates. Cow stock also met with good inquiry, and very little remained on hand; prices averaging for milch cows £14 to £21, barreners £9 to £16, stirks £5 to £8 each. The trade in sheep was active, and almost all were cleared off, at the following prices: Store ewes 34s. to 45s., store wethers 32s. to 42s., tegs 20s. to 30s. each. Pigs were dull, at higher rates.

ABINGDON FAIR has long been celebrated for its supply of good working horses. This year there was a falling off in numbers, but this was amply made up for by quality, and many were sold at fair prices. There was a good sprinkling of London horses, which commanded high figures. A few cows of quality were offered for sale, and soon found customers, while indifferent sorts and a great number of Irish yearlings were driven away unsold. More sheep and lambs were offered than is usually the case at this fair, and nearly every pen changed hands at most exorbitant prices.

BARNSTABLE FAIR. — As early as four o'clock a.m., droves of sheep were passing through to the pens, giving promise of a good supply, and an expected briskness in the demand. This was fully realized, for between nine and ten nearly every head was sold (and these numbered nearly 2,500), at an average advance on the " West Down," prices of from 2s. to 3s. per head; fat sheep brought nearly 7d. per lb.; breeding ewes, in good demand, at 42s. downward; Nott wethers, 33s. to 45s. (very choice); Nott ewes, 26s. to 38s.; horn wethers, 24s. to 30s.; horn ewes, 18s. to 24s. The bullock fair gave promise of a scanty supply until after nine o'clock, when several herds filled up the vacant spaces, and the market presented a tolerably animated appearance. Some of the choice lots were waited for at the entrance, and sold early at good prices. The range, however, may be quoted at about the same as realized last week, at West Down; oxen from 30*l.* to 38*l.* a pair, three year old steers, 12*l.* to 16*l.*, under that age, 6*l.* to 10*l.* The demand for fat cattle had somewhat declined, though there could be no fault found with the price made. The horse fair was not largely attended on the first day, though there was an appearance of activity, and prices for inferior articles ran high. The prices named for anything like a horse being from 30*l.* to 35*l.*

BARNARDCASTLE FAIR.—Cattle were numerous and of excellent quality, but horses were very moderate.

BASINGSTOKE FAIR.—The number of sheep penned was unusually small, and the business done consequently limited.

BELLINGHAM ST. CUTHBERT'S FAIR.—The general character of the fair was a dear selling market, many sales being effected at advanced prices. Lambs sold about 2s. a head above previous markets. The cattle shown were chiefly small, and commanded high prices. The number of foals was comparatively large, and the stock well grown—chiefly fitted for draught. The prices ranged high; some as far as £14 and £15.

BOGBAIN MONTHLY MARKET.—There was a large show of sheep, and a fair show of cattle and horses. Holders of all kinds of stock were disposed to claim an advance on last market's prices, and there was a consequent stiffness. Eventually the prices of the Muir of Ord came to rule the market, and numerous transactions were made. Wedders were in demand, and good lots readily commanded high prices. There was not much demand for milch cows. Good Highland cattle sold well. One of the best lots in the market, six-quarter-old Highlanders, belonging to Mr. A. Fraser, Faillie, were purchased for Mr. Baillie of Leys, at 7*l.* a-head with a luck-penny.

BRAMPTON FAIR.—The show of lambs, estimated at about 7,000, was not so numerous as that of former years, neither was the general size and quality of the stock up to the usual standard. It is evident good lambs are now very scarce, and that the majority of lots in the hands of dealers are either " mids " or " shots," or a mixture of these two classes. The supply consisted chiefly of Cheviots and crosses, together with a good sprinkling of blackfaces, but there were very few half-breds. Mr. Brown, of Witershields, sold the Fingland Cheviot lambs, the best of their kind on the Sands for 17s.; and Mr. Halliburton Little, of Malsgate, disposed of a lot of crosses at 18s. Although sales were slowly effected in the early part of the day, probably in consequence of the bad appearance which the previous day's rain had given to the lambs, yet the prices current at other markets were maintained, and before the close of the fair nearly two-thirds of the stock changed owners. Upwards of 80 year-old and Leicester rams and tup-lambs of the same breed were exposed for sale, and the greater portion found purchasers, the former at sums from £3 10s. to £5, the latter from £2 2s. to £2 10s.

BRIDGNORTH FAIR was not well attended, and the supply of stock correspondingly deficient. Good ewes went off at 6d. to 6½d., and wether sheep 7d. to 7½d. per lb. Pigs lower than last fair. The horse fair was pretty well stocked, and useful farm horses obtained good prices, varying between 20 and 30 gs.

CAWDOR TRYST.—There was a very small attendance of cattle, among which, however, a few good lots were shown. In the early part of the day little was doing, but towards evening business briskened, and a good many lots, particularly of the better quality, were disposed of at a considerable advance in price. We noted the following sales:—Mr. Macbean, Nairnside, sold a lot of two-year-old cross-stots, at £21, and refused the same money for a pure polled Aberdeenshire cow; Mr. Andrews, Househill, a lot of crosses, at £15; Mr. Robertson, Park, a lot of 20 mixed two-year-olds, at £13 5s.; Mr. Winton, Viewhill, sold a lot of two-year-old polled stots, at £13; Captain Sharp, Newton, sold two-year-old cross stots as £9 2s. 6d.; Mr. S. Fraser, Drumornie, sold a lot of Highland stirks at £2. A few small lots of sheep were also present. Mr. J. Mackintosh, Kinray, sold his Cheviot lambs at 8s. 9d.—*Nairn Telegraph.*

CARLISLE FAIR. — The attendance was large. The Sands were filled with cattle of all kinds, and the condition of the greater part was good. The holders looked high, and the prices they asked damped business greatly, though a considerable number of dealers were on the ground. It is not easy to convey to the mind of a reader the actual state of the market by an enumeration of prices, value depending very much upon form and condition. We may state, however, that Irish heifers and bullocks ranged from £6 to £17 a head; Irish stirks, £3 to £4; Highland heifers, £7 to £14; stots, £1 15s. to £2 10s.; Galloway heifers and bullocks, £6 to £13; Ayrshirk beasts, £7 to £12; stirks, £5 to £7 10s.; Milch cows, £10 to £18; in-calf, or with calves at their feet, £20 to £24—the latter price having been given for only one fancy animal. The show of lambs was large and very fine, the general run of prices being from 1s. 6d. to 2s. 6d. per head above those of last year. Sheep were correspondingly in advance. In the horse fair there were at least 500 horses of various kinds offered, but good ones were scarce. Some of the best were disposed of at from £45 to £50. There were a good many strong cart and farm horses, among which lay the principal demand. The nags and ponies mustered strongly, and a considerable number changed hands, but, generally speaking, at low prices. Some fine shelties sold well. On the whole, however, the horse fair was a dull one.

CHERTSEY FAIR.—The supply was good, and met with a quick sale. Milch cows, well-bred and in full profit, brought prices ranging from 14 to 20 gs., plain-bred ditto £10 to £15. Fat beasts £24, store ditto £14 to £16, and heifers £8 to £14 a-head. Yearlings £5 to £6, in-calf heifers £9 to £11, and grazing cattle £8 to £13. Horses, sound and young, and adapted for farming work, 15 to 20 gs.; cart colts 16 to 24 gs., and nag horses 12 to 16gs. Pigs, fat hogs 4s. 8d., and small ditto 5s. 8d. per st. Stores from 16s. to 25s. a-head.

CHESTERFIELD FAIR.—The number of cattle was below the average of this fair; a considerable amount of business was done in milkers and fresh barren cattle, at prices equal to late returns from surrounding fairs; the few fatted animals offered fully realized those given during the month; inferior stock sold heavily; yearling calves from £3 10s. to £5. The show of horses was very large for this fair—sales chiefly selected for their superiority of breed and form, joined with youth; these descriptions sold at good prices, varying from £30 to £45; good foals from £13 to £18. A moderate number of sheep; store ewes from 35s. to 45s.; ewe and wether hogs from 21s. to 26s., with a good amount of sales. The pig pens well filled, sales moderate, prices rather declining, except for immediate feeding; suckers in abundance, and at all prices.

DRIFFIELD FAIR had a large number of lambs shown. In consequence of more favourable accounts of the turnip crop there was an improvement in prices. Lambs sold at 25s. to 35s. per head.

DUNDEE FAIR.—The show of fat stock was very extensive, and some excellent lots changed hands at prices ranging from £17 to £24 10s. The market, however, upon the whole was stiff and dull, and a good many cattle remained unsold. Of the horses the show was also good, but very few transactions up to a late hour had taken place.

DUNSE SHEEP TRYST.—This tryst is principally set apart for draught ewes, but the number of lambs were as great as that of ewes. The market was considered good, and most of the lots were disposed of at what may be considered fair prices; half-bred draught ewes were from 30s. to 35s. Mr. Fender, Mountalban, sold his draught ewes at 32s. 4d.; Richard Miller, Esq., of Manderston, at 34s. 3d.; and John Wilson, Esq., of Cumledge, at 35s.; he also sold bred ditto at 42s. Lambs, half and three parts bred, were from 18s. 6d. to 26s.: the last price was obtained by Mr. John Forsythe, Rhodes, near Dunse. There was one lot of blackfaced ewe lambs sold at 7s. a-head. Mutton—ewe, 6d.; wedder, 7d. per lb.

EAST ILSLEY was thinly supplied with sheep, ewes and lambs, which were 3s. to 4s. dearer than at the last fair. Ewes 35s. to 45s., sheep 40s. to 46s., lambs 24s. to 38s.

ELGIN MONTHLY MARKET was stiff at first; but stock went off a shade higher than last month. Among the lots sold, we noted the following: Mr. Smith, Stonewells, a lot of three-year-old cross stots, at £17 10s. a head; Mr. Walker, Gervally, a lot do. do., at £14 6s. a head; Mr. Macdonald, Blackhillock, Rafford, a lot of two-year-old polled do., at £15 15s. a head; another lot of same class, smaller, at £12 a head; and a third lot, do. do., at £10 10s. a head; Mr. Sutherland, Shempston, a lot of two-year-old polled stots, at £15 10s. a head; Mr. Mitchell, Burnside, a lot of two-year-old cross queys, at £15 10s. a head; Mr. Hoyes, Lochinver, a lot do. do., at same price; Mr. Forsyth, Langmorn, a lot of two-year-old cross stots, at £14 10s. a head; and a lot of do. queys, at £10 7s. 6d. a head; Mr. Phimister, Inverugie, a lot of two-year-old queys, at £13 10s. a head; Mr. Cruickshank, Barmuckity, a lot of do. stots, at £13 a head; Miss Forsyth, Tarras, a lot do. do., at £12 12s. a head; Mr. Cruickshank, Meft, a lot of do. queys, at £12 10s. a head; Mr. Proctor, Lhanbryd, a lot of do. stots, at £12 a head; Mr. Maclean, a lot of polled year-olds, at £8 6s. a head.

EVESHAM FAIR.—The supply of fat stock was scarce and much inquired after. Beef brought 7¼d. to 7½d., mutton wether 7½d., ewe 7d. All was sold. Store cattle were scarce and dear. A cow and calf, and an in-calver were sold for £43; this will be some index to the prices demanded and got. Store sheep were more plentiful, but the sale slack. Cotswold rams sold well, the prices ranging as high as £18, Mr. Pickernell obtained £16 10s. 6d. for one. Good horses were scarce and dear.

FREEBURN TRYST.—There was a full attendance of both buyers and sellers, with more than an average show of cattle, principally two-year-old Highlanders. There were very few unsold beasts on the market-stance by one o'clock, when the buyers left to attend the Carr Bridge Tryst. The following are a few of the sales effected: Mr. Mackintosh, Dalmigarry, sold a lot of 12 two-year-old Highland stots and queys at £7 7s.; Mr. J. Noble, Inverbrough, a lot of two-year-old Highlanders at £6, and a Highland cow at £11 10s.; Messrs. J. Dunbar and A. Maclean, Corrybrough, their two-year-old Highlanders at £5 10s.; and A. Mackintosh, Woodend, a lot of six-quarter-old Highlanders at £5. A fine lot of three-year-old Highlanders, shown by Mr. Mackintosh, Freeburn, remained unsold. The demand was good, and the market a very brisk one.

GLASTONBURY (TOR) FAIR.—This important fair was very largely attended. The supply of sucking colts much as in former years. Prices ruled high for best choice heavy cart colts, as much as £13 to £20 per pair; those about £7 to to £8 were more numerous, and not so quickly bought up. In other horses not more than usual doing. A large number of poor sheep penned, sold very briskly at 3s. to 4s. higher than last year: most of them sold. A good supply of beef; rather a dull sale, at prices not quite so good as late fairs. Mutton sold fully as well. A good deal of business transacted, and a very fine day for the very large attendance. Apples sold at 5s. the bag of 6 pecks—8 or 9 making a hogshead of cyder.

GLOUCESTER MONTHLY MARKET was well supplied with beef, mutton, and lamb; and a great deal of business was done, at the following prices: Beef 6¾d. to 7d., mutton 7d. to 7½d., lamb 7½d. to 8d. per lb. Pigs 10s. 9d. to 11s. per score.

GRANTOWN TRYST.—The market being one of the most important of the season, was well attended; business commenced early, and some lots were disposed of by twelve o'clock. Although there was not much superior stock, the market may be described as a good one. Dealers seemed to act with confidence, and ready purchases were made at prices higher than at last market, and the greatest part of the stock was disposed of. The finest lot, one of 20 two-year-old Highland stots, belonging to Mr. Stewart, Dalvey, were purchased by Mr. Grant, Clashnoir, Glenlivet, at £11 each, though we understand the bargain admitted of a luck-penny. Mr. Stewart sold his two-year-old Highland queys at £9 a-piece. Captain Grant, Congash, sold a lot of two-year-old polled stots at £7 10s. each, and a polled stot at £9. Mr. Fraser, Auchernack, sold his two-year-old Highland stots to Mr. Smith, Nevie, at £9 each, and his two-year-old Highland queys to Mr. Lamb, Glenlivet, at £7 7s. each. Mr. Grant, Leanchvil, sold a lot of two-year-old Highland stots at £8 7s. each. Mr. Grant, Advie, sold a lot of two-year-old polled stots at £8 each. Mr. Grant, Delchroy, sold a mixed lot of two-year-old Highland stots and queys at £7 each. Mr. Grant, Ballıforth, another of the same at £6 each. Mr. Stewart, Balchule, sold a lot of two-year-old polled stots to Mr. Grant, Whitewreath, Elgin, at £7 5s. each, and another of two-year-old Highland stots at £5 each. In the sheep market very little business was done, though a good many of all sorts was brought forward.

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

In the earlier part of the past month a good deal of rain fell, which much impeded the completion of the harvest in the North; but after the first fortnight the weather became fine, and much progress has since been made, the temporary prevalence of wet not having done any serious injury; but the vapours since have been excessive, and the condition of some grain must be deteriorated. September has been a time of fluctuation as to prices, the balance being rather unfavourable; but we apprehend much of the late decline has been caused by the greater quantity of damp parcels coming to market than was expected, which being below the purposes of speculation, and avoided by first-rate millers, have dragged down the better qualities along with them. During the last three months prices in London have declined heavily; but taking the, general average as a guide the depreciation from July 17, when prices were 63s. 10d., to Sept. 18, when they were 55s. 8d., shows a difference of 8s. 2d. per qr. We therefore are coming to near the lowest point of the present year (April 24), when the quantity of damaged wheat pressing brought rates down to 53s., the fall from the highest price in 1856 (Jan. 4, 77s. 2d.) now being 20s. 5d. per qr. A better yield is the only consolation of growers, who may yet be apprehensive on the score of foreign importations, there being a universally good crop of wheat throughout the world. Now, as the arrival of 10,000 qrs. of English wheat does more to depress prices than 50,000 qrs. of foreign, because the latter mostly goes to granary; so, as we are close upon seed time, it is to be expected that less will come to market, and the rates paid for seed will check the downward tendency. The French, indeed, are already buyers; but, under the influence of their own greatly-reduced rates, seem unprepared for free purchases. Northern Europe cannot meet present rates, and Southern Russia and the Danube, where very low prices were expected, have advanced; and though America continues declining, she is at present out-manœuvred by our own markets, and supplies do not as yet reach New York in sufficient plenty to make liberal shipments possible, if rates allowed them. We do not, therefore, anticipate much lower prices, especially as old stocks were perhaps never lighter for many years. A good deal of the northern harvest in our own country being sprouted or damp, fine dry new qualities of Kent and Essex must find an extensive demand, as well as old foreign. Holders of the latter are generally firm, and, stores being only moderate, are likely to remain so.

The present rates abroad are subjoined, whereby the greater or less probability of shipments to British ports may be seen. In France importation continues allowed till September, 1858; but Government has not decided whether the suspension of exports will continue: were it permitted, the low rates for fine wheat at Bordeaux and Toulouse would very likely bring some here, as prices are only equal to about 48s. to 50s. 6d.; at Paris the price is 52s. At New York, after the last decline of 10 cents per bushel, the prices of fine white Southern wheat was quoted 1 dol. 50 c. per bushel, which, for 62lb. wheat, would be equal to 51s. 6d. per qr.; but fine flour was then dearer, the English advices then received being of better tone. It does not appear that Spain will be in condition to export this year, three successive bad harvests having so exhausted her stores, though the last has not been so seriously deficient, and in some localities was plentiful. Flour at Santander was about 63s. per sack, or 15s. beyond the best town-made, and at Seville wheat is still quoted as high as 71s. 6d. The Danube will have no considerable supplies of new wheat till the middle of October, and prices there have risen to about 38s. Markets have also improved at Odessa, heavy rains having kept back supplies: prices there are 38s. 9d. to 43s. 6d. per qr. for Ghirka. At Berdianski rates are 42s. 9d. to 43s. 6d., at Taganroc 38s. 6d. to 42s. 9d.: from all these places a three-months' voyage, with its risk, must be reckoned. At Danzic the finer qualities of old wheat appear nearly exhausted, and prices are close upon 60s. free on board. At Stettin quotations are 51s. 6d.; Konigsberg to 54s. for Volhynian wheat, Hambro' 46s. to 57s. Petersburg is much reduced in the stock of useful qualities, Cubanka being quoted 51s. 6d., and Saxonska 48s. Antwerp prices are moderate, viz., 55s. for red and white native produce; but the best Polish at Amsterdam is worth 65s. 6d. per qr. Algiers, by an active inquiry from Marseilles, has realized about 46s. 9d. for hard wheat and 51s. 6d. for soft. There appears, therefore, no foreign port where a sufficient margin obtains for liberal shipments, and as the monetary pressure in America appears subsiding, the decline obtaining there may cease.

The first wheat market in London commenced on moderate supplies, with a fair quantity for the morning from the near counties, in improved condition, which enabled factors to establish an advance of 2s. to 3s. per qr., while foreign participated in the rise to the extent of 1s. to 2s. Lynn, Hull, Newark, Bristol, and other places fully followed the advice, but Leeds and Birmingham made 1s. per qr. less. The change at Liverpool was limited to a rise of 2d. to 4d. per 70 lbs. on Tuesday; Friday's business being without further change. The second Monday had supplies more limited, and there being a good attendance from the North, with an active demand for red qualities, they fully advanced 1s. per qr. The trade in white being perfectly dull. Many markets subsequently made no change in quotations, as Hull, Boston, and Newcastle; but others, as Lincoln, Louth, and Wakefield, were 1s. to 2s. per qr. down. Liverpool, on Tuesday, found a check put upon business by holders demanding more money for old wheat; but on Friday some concession was made on new samples, Irish being reduced 3d. to 4d. per 70lbs. Through the week the London trade had been so slow that many samples were left over. On the third Monday there was a good average quantity on offer, including the fresh samples from Essex and Kent, giving more of a display than of late, much against prices, which eventually gave way for fine wheat to the extent of 3s. per qr., and still more on inferior sorts. Holders, however, of foreign, made but a small concession; viz., about 1s. to 2s. per qr. In the country the decline in its extent was generally resisted, Lincoln, Leicester, Nottingham, and other places, only quoting former prices; but at Hull, Gloucester, Boston, and other towns, the fall was reported 2s.; Newark being still more reduced than London in the value of inferior wheat. Liverpool Tuesday's market noted a decline on new Irish wheat of 4d. to 6d. per 70lbs. On the last Monday supplies were moderate, and the market partially recovered its tone, there being some country buyers; but no advance could be generally realized, though business was good. In foreign there was but little passing.

The arrivals into London during the month have been in English 30,045 qrs., in foreign 45,707 qrs., producing a weekly average of 18,987 qrs., or about 1,000 qrs. per week under August. The sales noted in the country, in the last four weeks, nearly exceed 1856 in the same time by 100,000 qrs., being then only 342,738 qrs., whereas now they are 452,116 qrs. This, however, is partly to be attributed to the greater exhaustion of the crop last year, though it also indicates an increased consumption.

The prices of town-made flour throughout the month have been unvaried, viz., 50s. per sack, and it has been the same with foreign samples, which all through have been held at full rates for shipment, arrivals being very scanty and stocks equally so. In country made sorts, there have been small fluctuations, leaving prices much as they commenced. The arrivals during the four weeks in September were 62,410 sacks from the country, with 1,288 sacks 548 barrels from abroad. This shows a considerable weekly average beyond the former month in English samples, viz., to the extent of 4,600 sacks; but a further slight decrease in foreign.

The trade in barley has been very steady, as well as the prices, the only change being 1s. per qr. improvement in fine English malting qualities, on the second Monday. The permission of the French Government to distil from grain must have some influence on the demand for qualities fit for that purpose; but as kindly malting samples do not abound, and the whole crop is considered unequal and somewhat deficient, we expect remunerative prices all through the season. Peas for hog feed not reaching an average growth, will also occasion a large demand on grinding qualities; the low sorts of which are to be had at rates relatively much cheaper than oats, viz., 42 lbs. per bushel, at 22s. and 23s. per qr., maize being held at a price too high to make much interference, and the crop not promising abundance. During the month, the receipts in London have been 8,470 qrs. English, and 48,821 qrs. foreign, both showing a considerable increase over last month, consumption being larger; but the great excess in foreign is to be attributed to the plentiful supply of light grinding cargoes from the East, which are more fit to be ranged with Irish bere than barley. The new crop in Holland and the Baltic is estimated at below an average. Malt of good quality has sold well, and kept its value through the month, but low sorts have been dull.

Considering the continued heavy foreign arrivals of oats, the trade throughout the month has been unusually steady; by far the greater proportion has been from Russia, which, being of a quality that keeps well, has scarcely receded in value more than 6d. per qr. on the third Monday, under a supply of nearly 70,000 quarters. Very little has come from Scotland or Ireland, and as statistics from the latter show a diminished acreable growth, so our dependence must be increased on foreign supplies, and the chances seem rather in favour of an advance than a decline, especially in old oats, stocks of which are small here, and well nigh exhausted on the Continent. Generally the new crop is considered deficient, though some fine heavy samples have been produced. The best Archangel and Riga oats are now procurable at about 23s. per qr.; when sweet, there is no better horse-corn. The arrivals in London during the month have been—in native produce, 5,319; from Scotland, 904; 3,060 from Ireland, with 141,166 qrs. foreign. This, though it gives the large weekly average of 37,612 qrs., is much below the previous, when it reached 46,746 qrs.

Some cargoes from Alexandria, received during the month, have made beans more plentiful, and checked the tendency to advance in old English qualities. New beans, as a consequence, have rather given way, but generally prices have scarcely changed since last month. Old English sorts, in consequence of a short yield, seem likely to rule high through the season, as many buyers will not use Egyptian for consumption; and as our deficiency will be known at Alexandria, it does not seem likely that prices will come down there much. Egyptian here are worth 38s. The supplies in the month have been 2,181 qrs. of home-growth, and 4,796 qrs. foreign, showing a weekly average increase over August of about 1,200 qrs.

Peas, like most spring corn, have been scarcely subject to any change of value. At the commencement of the month white boilers were completely neglected; at the close they have found a good inquiry, and holders have demanded 2s. per qr. advance; still they are relatively moderate as compared with those for hog feed, the latter being worth for duns 44s., for maples 46s., while the best white English boilers are only quoted 50s. Whether the latter will advance will partly depend on the ability of Canada to ship to this market. In the Baltic, whence they principally come, the crop is very deficient. So few hog peas are imported, that growers seem likely to rule the market. The imports into London in September, of all kinds, were 1,364 qrs. English and 1,255 foreign.

Much better supplies of linseed during the past month have come to hand, and at one time the market seemed rather shaken; but the extreme lightness of stock, as well as of the crop abroad, and the universally high rates obtaining, having re-assured holders, prices have been firm all through the month, with scarcely any quotable variation. Cakes have also sold well, the drought first making their free use necessary for stock, and, though plenty of green feed has since obtained, it has scarcely diminished their use. The arrivals this month were 30,229 qrs., against 20,626 qrs. in August.

In the seed-trade, white mustard and canary have both materially advanced: the former in white qualities 4s. per bushel, and the latter having sprung up to £6 per qr., owing to a great deficiency in the English as well as Dutch crop. Red cloverseed during the earlier part of the month was looking up, in consequence of the rain; but afterwards, in consequence of fine weather, French offers were neglected. Reports from France and Germany are various; but it is acknowledged in both countries, whatever the yield, the samples will be very fine and strong. White seed and trefoil have commanded little attention. Tares, though very dry and fit for keeping, have rather receded in value, being plentiful. Carraway has risen 5s. per cwt. Rapeseed, hempseed, coriander and other descriptions remain much as last quoted, with a slow trade.

CURRENCY PER IMPERIAL MEASURE.

Shillings per Quarter

WHEAT, Essex and Kent, white				48 to	63	new	52 to	66
Ditto, red				48	58		50	59
Norfolk, Linc. and Yorks., red				48	58		50	59
BARLEY, malting	40 to	41				Chevalier, new	42	46
Distilling	37	39				Grinding	26	32
MALT, Essex, Norfolk, and Suffolk		63		68	75	new	72	74
Kingston, Ware, and town made		65		69	76	,,	73	75
Brown				58	60		—	—
RYE				—	—		30	38
OATS, English, feed	21	26				Potato	27	32
Scotch, feed	20	26				Potato	28	34
Irish, feed, white				20	26	fine	25	32
Ditto, black				20	24	,,	—	25
BEANS, Mazagan	34	39				Ticks	36	39
Harrow	36	40				Pigeon	43	47
PEAS, white boilers	40	50	Maple	42	45	Grey	40	42
FLOUR, per sack of 280lbs., Town, Households				47s.		fine	48	50
Country	41	43				Households	44	40
Norfolk and Suffolk, ex-ship							39	45

FOREIGN GRAIN.

Shillings per Quarter

WHEAT, Dantzic, mixed	60	63	high do.	—	—	extra	—	66
Konigsberg	50	65	,,	—	—		—	—
Rostock	46	65	fine	—	—		—	—
American, white	60	62	red	56	58		—	—
Pomera., Meckbg., & Uckermrk, red				50	58		—	—
Silesian, red	45	54				white	58	62
Danish and Holstein							45	52
Russian, hard	45	58				French	(none)	
St. Petersburg and Riga							46	58
Rhine and Belgium							—	—
BARLEY, grinding	24	31				Distilling	35	40
OATS, Dutch, brew, and Polands	20	28				Feed	19	25
Danish and Swedish, feed	20	26				Stralsund	23	26
Russian							21	24
BEANS, Friesland and Holstein							37	39
Konigsberg	32	37				Egyptian	37	38
PEAS, feeding	36	37				fine boilers	40	43
INDIAN CORN, white	36	39				yellow	36	39
FLOUR, per sack......French	—	—				Spanish	—	—
American, per barrel, sour	22	26				sweet	30	34

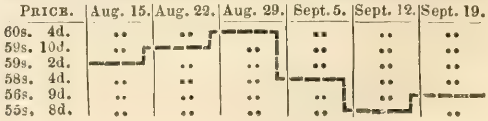
IMPERIAL AVERAGES.

FOR THE LAST SIX WEEKS:	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Aug. 15, 1857	59	2	40	0	27	8	40	5	47	1	40	10
Aug. 22, 1857	59	10	39	10	27	11	39	11	47	5	41	5
Aug. 29, 1857	60	4	42	8	27	8	38	7	47	7	41	10
Sept. 5, 1857	58	4	42	7	26	7	39	2	46	11	41	8
Sept. 12, 1857	55	8	42	5	26	1	38	9	46	0	41	7
Sept. 19, 1857	56	9	42	3	26	5	37	0	45	4	42	11
Aggregate average	58	4	41	8	27	1	39	0	46	9	41	8
Same time last year	69	7	45	6	26	11	43	11	45	3	40	3

COMPARATIVE AVERAGES—1857-56.

From last Friday's *Gaz.*		s.	d.	From *Gazette* of 1856.		s.	d.
Wheat	135,244 qrs.	56	9	Wheat	106,353 qrs.	64	5
Barley	28,275	42	3	Barley	22,420	45	10
Oats	8,257	26	5	Oats	7,925	27	2
Rye	1,208	37	0	Rye	819	44	10
Beans	4,680	45	4	Beans	1,868	46	3
Peas	1,709	42	11	Peas	609	41	9

FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT



PRICES OF SEEDS.

BRITISH SEEDS.

TARES, new, per bushel	5s. 0d. to 5s. 9d.
MUSTARDSEED, per bushel	new 17s. to 21s., brown to 21s.
CORIANDER, per cwt	20s. to 24s.
CANARY, per qr	80s. to 90s.
LINSEED, per qr., sowing —s. to —s.	crushing 71s. to 72s.
LINSEED CAKES, per ton	£9 10s. to £10 0s.
RAPESEED, per qr	70s. to 72s.
RAPE CAKE, per ton	£5 0s. to £5 10s.

FOREIGN SEEDS. &c.

TARES, per bushel	0s. 0d. to 0s. 0d.
HEMPSEED, small, per qr. —s. to 44s.	Do. Dutch 46s.
CORIANDER, per cwt	15s. to 20s.
CARRAWAY ,,	46s. to 50s.
LINSEED, per qr., Baltic 69s. to 72s.	Bombay 71s. to 73s.
LINSEED CAKE, per ton	£9 10s. to £10 0s.
RAPESEED, Dutch	76s. to 80s.
RAPE CAKE, per ton	£5 0s. to £5 10s.

HOP MARKET.

BOROUGH MONDAY, Sept. 28.—The hop picking is now nearly finished, and the greater portion of the crop has been secured in good condition. Our market to-day is firmer, with a more active demand, and as growers do not at present press their growths on the market, prices exhibit an upward tendency. Mid and East Kents, 80s. to 100s. to 112s.; Weald of Kents, 63s. to 75s to 80s.; Sussex Pockets, 60s. to 65s. to 70s. Duty £220,000. HART & WILSON.

MAIDSTONE, Sept. 24.—The weather has for the last few days been most favourable, and the picking has been carried on with the greatest activity. Many planters in the neighbourhood have finished, and there will not be many left unpicked after next week should this weather continue. The recent rains, followed as they were by heat and sunshine, came at a most seasonable time, and have greatly increased the crop, bettering its condition and thoroughly cleansing the fruit. The duty is estimated very high. Many, however, think it overset at £220,000, while others are of opinion that that sum will be paid. At the Staplehurst hop fair on Wednesday, the impression appeared to be that it will not reach the £200 000.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS, LONDON, MONDAY, September 28.—Since our last report, full average time-of-year supplies of Potatoes have reached us coastwise and by land-carriage. A steady business is doing in most kinds, as follows: York Regents, 80s. to 100s.; Kent and Essex, 70s. to 100s.; Scotch, 70s. to 90s.; and middlings, 60s. to 70s. per ton. Last week's imports were 6 bags from Hambro', 100 sacks from Antwerp, 4 baskets and 58 bags from Rotterdam, and 4 bags from Harlingen.

COUNTRY POTATO MARKETS.—YORK, Sept, 19: Potatoes 9d. to 10d. per peck, and 2s. 6d. to 3s. per bushel.—LEEDS, Sept. 22: A middling show of Potatoes, which sold at 9½d. to 10d. per 21lbs. wholesale, and 10d. to 11d. retail.—RICHMOND, Sept. 19: Potatoes 2s. 8d. per bush.—SHEFFIELD, Sept. 22: Potatoes 7s. to 9s. per 18 st.—MANCHESTER, Sept. 22: Potatoes sell at from 9s. to 14s. per 240lbs.

ENGLISH BUTTER MARKET.

SEPT. 28.—Our trade is firm, and some sorts of Butter bring more money.

Dorset, fine	per cwt.	126s. to 128s.
Ditto, middling		104s. to 112s.
Fresh	per doz. lbs.	13s. to 14s.

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.:	s.	s.	CHEESE, per cwt.:	s.	s.
Friesland	116 to	124	Cheshire	78	84
Kiel	112	120	Ditto, new	66	76
Dorset	116	124	Cheddar	74	84
Carlow	104	114	Double Gloucester	58	68
Waterford	104	116	HAMS: York	86	96
Cork,	110	118	Westmoreland	88	94
Limerick	100	112	Irish	—	—
Sligo	104	118	BACON: Wiltshire, dried	84	88
FRESH, per dozen..13s.0d. to 15s.0d.			Irish, green	74	78

BISHOPSTOKE MONTHLY MARKET.—The supply of cheese was large, and of first-rate quality. Trade was dull and prices rather lower than last market.

WOOL MARKETS.

ENGLISH WOOL MARKET.

LONDON, MONDAY, Sept. 28.—There is very little change to notice in the value of any kind of wool. The supply in the market is very moderate, and manufacturers continue to purchase rather freely. For export, very little has been done of late; nevertheless, holders generally still entertain great confidence as regards the future course of the trade.

Per pack of 240lbs.

	£	s.		£	s.
Fleeces—Southdown Hogs	£20	10	to	£21	0
Do. Half-bred Hogs	20	0		21	0
Do. Kent	19	0		20	0
Do. Southdown Ewes and Wethers	19	10		20	0
Do. Leicester do.	18	10		19	0
Sorts—Clothing, picklock	22	0		23	0
Do. Prime and picklock	19	10		20	0
Do. Choice	18	0		19	0
Do. Super	17	0		18	0
Do. Combing—Wether matching	22	0		23	0
Do. Picklock	19	10		20	0
Do. Common	16	0		17	0
Do. Hog matching	24	0		25	0
Do. Picklock matching	20	10		21	10
Do. Super do.	17	10		18	10

LEEDS WOOL MARKET, Sept. 25.—A fair business is doing to supply the current wants of the manufacturers, and prices continue firm.

GIRWOOD'S EDINBURGH AND GLASGOW WOOL SALES—SEPTEMBER.—The former of these sales took place at Tanfield on Thursday, and the latter at York-street, Glasgow, on Friday, when about 2,200 bales of wool were submitted to public competition. The attendance of buyers was very numerous, and for good and well-managed wools the biddings were spirited and the prices realized high. In white Highland, Cheviot, and half-bred wools, the competition was great, which was also the case in laid Cheviot. Of white Highland the quantity exposed for sale was large and of superior quality, and for the Haystoun lot the extraordinary price of 26s. 6d. per stone was obtained, and for another lot 26s. There was a large supply of Cheviots of good quality, and for this class 37s. 6d. was obtained for Border ewes, and 42s. for Haystoun hogs. In half-breds there was a large display, and many very superior lots. Ewe wools in this class reached 37s. 6d. per stone, and the Oldhall (Caithness) hogs 42s. Crosses reached 35s. 6d. for a Perthshire lot. In laid Cheviots there was an unprecedented display as regards general excellence, while the quantity was very large; and for this class the competition was keen. Prices ranged from 23s. to 24s. 6d for Kintradwell, and the same price for Culgower hogs. In laid, cross, and Highland the quantities were small, and quality not of the best; but for the latter 15s. 6d. was reached.—At the Glasgow sale, where about 500 bales were sold, the prices realised were much in accordance with those obtained at Edinburgh.

GLOUCESTER WOOL FAIR.—About 80 tods, principally mixed ewe and hoggett, were exhibited, and the whole was sold at 42s. per tod of 28lbs.

LEITH WOOL SALES.—Messrs. Adam and Macgregor's wool sale for September, took place on Wednesday last, when about 2,000 bales were disposed of. The attendance of buyers was much more numerous than on any previous occasion, which was scarcely to be expected, this being the season when buyers are in general heavily stocked; while this year, owing to the present high price of wool, they are more than usually unwilling to extend their purchases beyond immediate requirements. The biddings were well sustained for Cheviots and half-breds. Of the latter, the supply was comparatively small, arising from the rapidity with which all good combing wools have been bought up this year for the English market. The lot from "Sybster," Caithness, was much admired; also the "Beaufort Castle" Southdowns, and the "Eldridge" and "Wood" clips of white Cheviots. Of laid Cheviots the selection was very large, and a good demand existed for the best qualities. Amongst those which brought top prices may be noticed the Duke of Sutherland's "Skelbo" clip, and the "Dell" clip from Inverness. Highland wools were rather neglected. Mr. Dowell, of Dowell and Lyon, acted as selling-broker. We annex an average range of the prices realized:—Half-bred hog and ewe, 36s. to 42s.; white Cheviots, 35s. to 40s.; do. cross, 28s. to 34s.; do. Highland, 18s. to 22s. 6d.; laid Cheviots, 23s. to 26s.; do. Highland, 14s. to 16s.

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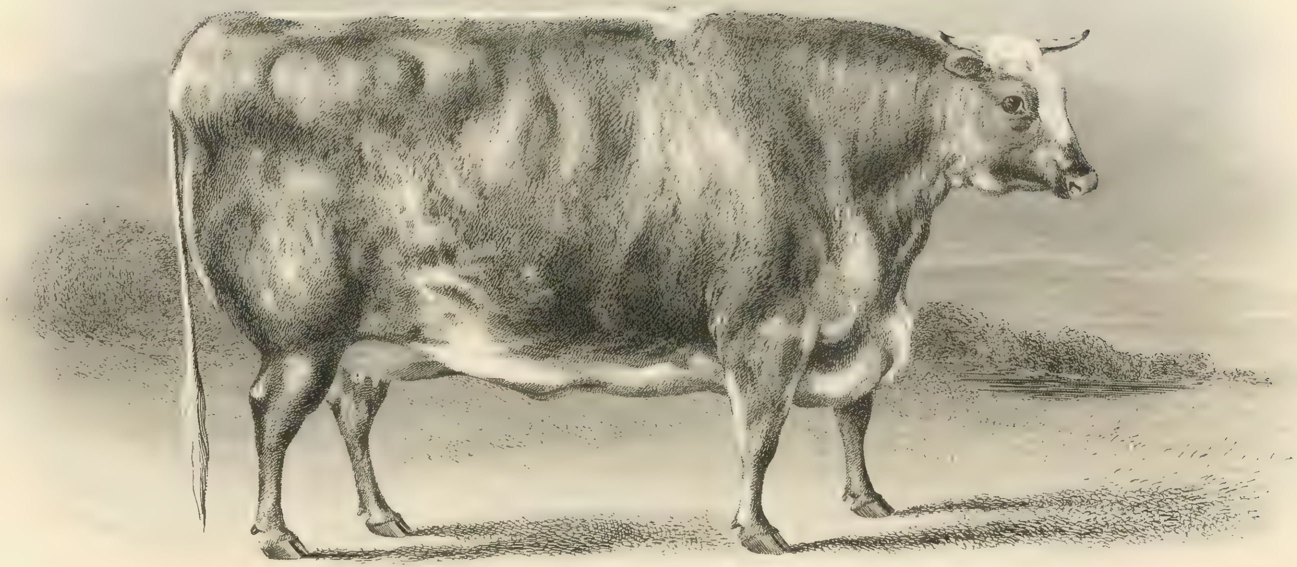


THE FARMER'S MAGAZINE.

NOVEMBER, 1857.

PLATE I.

A SHORTHORN COW,

THE PROPERTY OF MR. RICHARD STRATTON, OF BROAD HINTON, SWINDON.

This cow, to be traced as the "Third Duchess of Gloucester," was bred at Broad Hinton, and calved on the 2nd of October, 1851. She was by Red Duke (8624), out of Elegance, by Lottery (4280), her dam Young Moss Rose, by Lottery (4280)—Moss Rose, by Phœnix (6290).

The "Third Duchess of Gloucester" has long been famous at our agricultural shows. In 1853, when two years old, she took a first prize of 10 sovs. at Cirencester, another of 10 sovs. at Gloucester, a third of 10 sovs. at Newport, Monmouthshire; one of 5 sovs. at Chippenham, and another of 5 sovs at Devizes.

In 1854, "Third Duchess of Gloucester" took the first prize of 8 sovs. as the best cow in-milk or in-calf, at the Bath Meeting of the West of England Society, the first prize of 10 sovs. at the Ripon Meeting of the Yorkshire Society, another of 10 sovs. at Gloucester, another of 10 sovs. at Cirencester; and, again, one of 5 sovs. each at Chippenham and Devizes.

At the Great Paris Exhibition of 1855, "Third Duchess of Gloucester" received the first prize of 28 sovs., and the GOLD MEDAL, as "the best cow." In July, 1856, she cast twin calves, and in the following month was put up to fatten for Christmas. Her success here was as great as it had been when she was shown as a breeding animal. At Gloucester she took the first prize of 6 sovs.; at Birmingham the first prize of 10 sovs., with the silver medal to Mr. Stratton as the breeder; and at the Smithfield Club the first prize of 20 sovs., with the silver medal to the breeder, and the GOLD MEDAL as "the best of all the cows or heifers."

Indeed, "the most perfect animal in the yard was Mr. Stratton's Short-horn cow." She was a most beautiful one, both in colour and frame; of a deep, symmetrical form throughout; head and horns good, with a very handsome countenance; her neck and chine, perhaps, rather too fine in proportion to her general frame, but in every other respect nearly perfect. She stood wide and noble-looking, while her amount of firm flesh was something really wonderful.

Mr. Stratton deservedly stands very high as a breeder of Shorthorns, and as a feeder he had it this last year more than ever his own way. What with the white ox—a portrait of which was given in our June number—and this cow, he carried all before him in the Shorthorn classes at the three great fat-cattle shows of the season—at Birmingham, the Smithfield Club, and at Poissy, the Smithfield of Paris.

PLATE II.

WARLOCK; A THOROUGHBRED ENTIRE HORSE.

Warlock, bred by Lord Durham in 1853, is by Birdcatcher out of Elphine, by Emilius, her dam Variation, by Bustard—Johanna Southcote by Beningborough.

Irish Birdcatcher, bred in Ireland, in 1833, is by Sir Hercules out of Guiccioli, by Bob Booty. His fame as a stallion is too well established, both in this and the sister-kingdom, for us to dwell further on it now. Amongst other winners, however, his stock include one of the Derby in Daniel O'Rourke, one Oaks with Songstress, and three Great St. Leger heroes—The Baron, The Knight of St. George, and Warlock. Chanticleer and very many other good names also go to his credit.

Elphine, bred by Mr. Thornhill in 1837, and put to the stud in 1841, is also the dam of Petit Morceau, New Era, Lambton, The Incurable, and others.

Warlock is a roan or partly bay horse—on the head, neck, and top of his quarters—standing fifteen hands two and a-half inches high. He has a small Birdcatcher head, nicely set on to a very blood-like neck. He is somewhat upright in his shoulder, but has a good barrel, back, and loins, with capital arms. He is rather narrow in his quarters, and light in his thighs; standing somewhat upright before, and, for his size, high on the leg. He has a white heel behind—the near side—and a star on the forehead; with a full tail, which he carries well out, when in action—his style of going very corky and catching. He has proved himself to be very stout and honest.

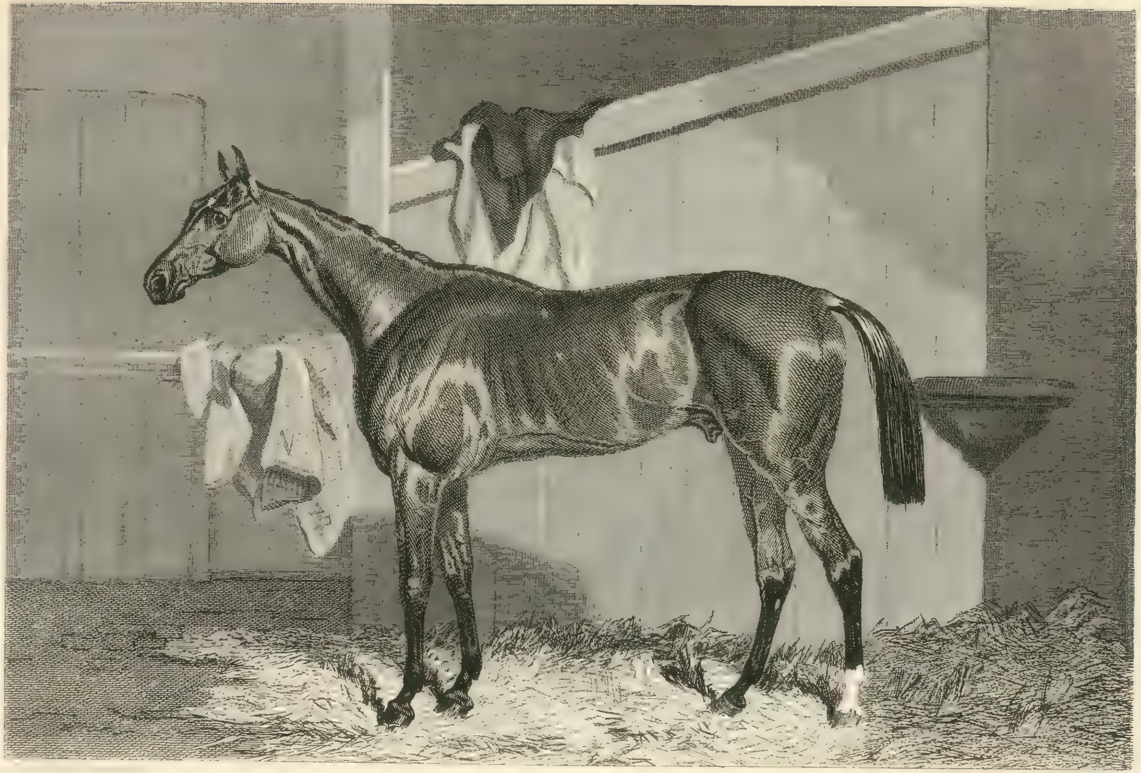
FARM-YARD MANURE.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

We can hardly too often recur to the subject of manure. It is only by the aid of fertilizers that man maintains the incessant contest which is ever going on between his crops and their soils. If he is skilful and industrious in the application of dressings, his lands are rendered at least as fertile by tillage, and commonly more so, than when left to nature's care. But if he is either careless in their preparation or ignorant of the common-sense results of neglect, his manure is impoverished, and his farm becomes diminished in value. The preparation of his farm-yard manure is the most generally important of all his dressings. It is here that many mistakes are apt to be made, not only by the farmer, but by those laborious chemists who have during the present generation so materially promoted the advancement of agriculture.

These errors are in some degree attributable to the natural difficulties of the subject. The merely procuring a fair specimen of farm-yard manure for analysis is no easy task. It is often very different in composition, on different sides of the same yard. Some specimens, even from the same spot, contain more straw than others, or different kinds of straw: others abound too much in the dung of one kind of animals. Then, again, one yard is cooler or drier than another, has a favourable or unfavourable aspect. In one the stock are better fed, in another the food is oftener changed. These and many other sources of variation ever render comparative chemical examinations of yard-compost less valuable than when we are examining other fertilizers. Still these are not reasons why we should abandon those valuable investigations. They are the very arguments why we should extend and verify our trials. Of that opinion is, evidently, the enlightened professor of chemistry at Cirencester; and what Mr. Voelcker has recently been illustrating will well repay my reader, on some November evening, for the most careful consideration. He may perhaps, in reading the professor's valuable paper "On Farm-yard Manure, and the Drainage of Dung-heaps" (*Jour. R. A. S. vol.* xviii., *p.* 111), find some practical conclusions to which the results of his own experience may be opposed. But let such an inquirer reflect upon the varying influences under which farm-yard compost is prepared; and, in any case, let him not forget that it is only by repeated and patient inquiries after truth that her confines are even approached. Two very material questions here engaged this accurate chemist's attention: the loss of ammonia during 1, the preparation of yard-manure; and 2, after it had been made into compost heaps. We shall see that he was not unmindful of either its gaseous emanations, or of its loss in the drainage water.

It is satisfactory to find, from these researches, that the loss of ammonia from fermenting dung is commonly not so considerable as is sometimes believed. We are, in these inquiries, perhaps too ready to be deceived by careless observation. "There are many people (observes Mr. Voelcker) who run wild with the idea that everything that smells strongly must contain free ammonia; but that is far too sweeping a conclusion. In the case of horse-dung for instance, we are too apt to believe this loss to be far greater than it really is. Yet (as the professor adds) although in fermenting horse-dung the proportion of nitrogen is larger than in fresh, which agrees well with previous analyses of fresh or rotten common yard-manure, yet in perfectly fresh horse-dung the amount of free ammonia is scarcely weighable, it being only about 3 parts in every 100,000 parts of dung, or 3lbs. for every 40 tons; the same description of manure in an active state of fermentation yields somewhat



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more, but still a very inconsiderable quantity of free ammonia. Thus under the most favourable circumstances 100,000 parts of horse-dung yield only 49 parts of free ammonia; or in other words 40 tons in round numbers yield, on long-continued boiling, 49 lbs. of ammonia. It must not be supposed, however, that this quantity of ammonia is dissipated into the air during the fermentation of the dung, for it is only in the interior of the dung-heap that ammonia is liberated. It is, indeed, only on turning a heap that ammonia escapes at all, in any perceptible degree; but as soon as the external layers have become cooled down to the ordinary temperature of the air, its escape is arrested. There can, therefore, be not the slightest doubt that but a very minute quantity of ammonia passes into the air, and the remainder is fixed in the heap, provided the heap is kept in such a manner that rain cannot remove from it much of the soluble matters, and with them ammoniacal salts.

"The strong smell which is observed, on turning a dung-heap, no doubt has led many greatly to over-estimate the amount of ammonia which escapes from farm-yard manure in an active state of fermentation. But I would observe that nothing is more fallacious than the estimation of the amount of ammonia by the pungency of the smell which is given off from fermenting animal matters. Such matters often give off a very powerful smell, which is due to peculiar volatile organic combinations—to some sulphuretted and phosphoretted hydrogen and a great variety of gaseous matters, amongst which there is ammonia gas in very minute quantities. The smell of this highly complicated and but scantily examined mixture of gaseous matters as a whole is ascribed by the popular mind to ammonia. From these products of putrefaction, however, ammonia can be completely separated, without in the least destroying the peculiar offensive smell which emanates from organic matters in a state of decomposition. If, for instance, dilute sulphuric acid is added to farmyard manure or liquid manure, the smell of these substances, instead of becoming neutralized by the acid, in reality becomes more offensive. This arises in great measure from the liberation of sulphuretted hydrogen. Hence acids are not well adapted for disinfecting cesspools or nightsoil. As dilute sulphuric acid neutralizes instantly feer ammonia, forming with it an inodorous salt, which is not volatile at the ordinary temperature, it is evident that the fœtid smell of putrefying matters has much less to do with ammonia than is generally believed."

We see then, from the result of such examination, that in the preparation of dung, if the heat generated is not excessive, that then the ammonia evolved is far from being considerable.

But if we have attended to this, if we have carefully prepared the dung, still another care then arises, its preservation from rain, and consequent impoverishment by drainage. Mr. Voelcker alludes to the too frequent neglect of this precaution, when he tells us that "in many places in England, especially in Devonshire and in some parts of Gloucestershire, it is a common practice to place manure-heaps by the roadside, often on sloping ground, and to keep these loosely-erected heaps for a considerable length of time before carting the dung on the field. On other farms, the manure is allowed to remain loosely scattered about in uncovered yards for months before it is removed. Heavy showers of rain falling on manure kept in such manner, by washing out the soluble fertilizing constituents of dung, necessarily greatly deteriorate its value. It is well-known that the more or less dark-coloured liquids which flow from badly-kept dung-heaps in rainy weather possess high fertilizing properties. According to the rain which falls at the time of collecting these drainings, according to the character of the manure, and similar modifying circumstances, the composition of the drainings from dung-heaps is necessarily subject to great variations. The general character of these liquids, however, is the same in dilute and in concentrated drainings. Several samples of dung-drainings were recently examined by me, and, from their analyses, it will be seen that they contain a variety of fertilizing constituents which it is most desirable to retain in dung-heaps.

"According to the analytical results obtained in these different determinations, an imperial gallon of these drainings contained—

Volatile and combustible constituents 395·66 grains.

Viz.:—

Ammonia driven out on boiling	36·25	Together. 39·36	
Ammonia in the state of salts decomposed by quick lime.	3·11		
Ulmic and humic acid		125·50	
Carbonic acid, expelled on boiling		88·20	
Other organic matters (containing 3·59 of nitrogen)... ..		142·60	
			395·66

Mineral matters (ash) 368·98 grains. Viz.:—

Soluble silica	1·50	
Phosphate of lime, with a little phosphate of iron..	15·81	
Carbonate of lime	34·91	
Carbonate of magnesia	25·66	
Sulphate of lime	4·36	
Chloride of sodium	45·70	
Chloride of potassium	70·50	
Carbonate of potash	170·54	
		368·98
Total per gallon in grains ..		764·64

"These analytical results suggest the following remarks :

"1. It will be seen that these drainings contain a good deal of ammonia, which should not be allowed to run to waste.

"2. They also contain phosphate of lime, a constituent not present in the urine of animals. The fermentation of the dung-heap thus brings a portion of the phosphates contained in manure into a soluble state, and enables them to be washed out by any watery liquid that comes in contact with them.

"3. Drainings of dung-heaps are rich in alkaline salts, especially in the more valuable salts of potash.

"4. By allowing the washings of dung-heaps to run to waste, not only ammonia is lost, but also much soluble organic matter, salts of potash and other inorganic substances, which enter into the composition of our crops, and which are necessary to their growth.

"A dung-heap composed chiefly of mixed fresh horse's, cow's, or pig's dung, furnished the material for another analysis of drainings. This liquid was much darker than the two preceding liquids, possessed an offensive smell, although it contained no sulphuretted hydrogen, and was collected at a time when no rains had fallen for several weeks, which circumstance accounts for its greater concentration. It was submitted to the same course of analysis as the first drainings. 7,000 grains evaporated to dryness produced 135¾ grains of dry matters; and this quantity, on burning in a platinum dish, furnished 62½ grains of mineral matters.

"The following table represents the composition of the solid Substances found in one imperial gallon of drainings from fresh manure :

Composition of Solid Matters in one Gallon of Drainings from Fresh Farmyard Manure.

Ready-formed ammonia (principally present as humate and ulmate of ammonia)	15·13
Organic matters	716·81
* * Inorganic matters (ash)	625·80
Total amount of solid matter in one gallon of drainings	1357.74
Containing nitrogen	31·08
Equal to ammonia	37·73

* * 625·80 of ash consisted of:

Silica	9·51
Phosphates of lime and iron	72·65
Carbonate of lime	59·58
Sulphate of lime	14·27
Carbonate of magnesia	9·95
Carbonate of potash	297·38
Chloride of potassium	60·64
Chloride of sodium	101·82

"It will be observed that these drainings contain about double the amount of solid matter which was found in the liquid from the first heap. The composition of this solid matter compared with that of the solid matter in the liquid from the first heap, moreover, presents us with some particulars to which it may be advisable briefly to allude.

"In the first place I would remark that notwithstanding the greater concentration of the third liquid, as compared with the first, the proportion of ammonia present in the form of ammoniacal salts is less than one-half; for whilst the first drainings contained in the gallon 39 grains of ready-formed ammonia in round numbers, the third drainings contained only 15 grains per gallon.

"It thus appears that drainings from manure-heaps in an advanced stage of decomposition contained, as may be naturally expected, a larger proportion of ready-formed ammonia than the liquid which flows from heaps composed of fresh dung. It is further worthy of notice that the first drainings contained nearly all the nitrogen in the form of ammoniacal salts, whilst the drainings from fresh dung contained the larger proportion of this element in the form of soluble organic substances. The most important constituent of farmyard manure, *i. e.*, nitrogen, thus is liable to be wasted in the drainings, whether they proceed from rotten or fresh manure, for in either case it passes off in a soluble state of combination."

Now, how do these laboriously-obtained results accord with what we see in our own homesteads ? If there must be uncovered yards, if the rain must shower down over their contents, do we always strive to diminish this as much as possible? Do we reflect that if our farmyard buildings cover an acre of ground, that upon that acre of slate or thatch about 2,500 tons of rain-water annually fall ? Do we not know that if proper eaves troughs are not provided, that then this large amount of water needlessly and injuriously mingles with the farmyard dung ? and that too in addition to the 2,500 tons of rain-water per acre which fall on those uncovered yards ? It may be true that it is difficult to entirely prevent this loss, but there are few cases in which it may not be diminished. And then the placing the compost heaps in bad situations, or in "pies" too large, are errors equally easy of being avoided. It is only by such small savings, let us ever remember, that considerable accumulations are made; no one can feel this more than the agriculturist, for he is ever surrounded by other sources of waste (besides those on which I have been dwelling); insects, weeds, vermin, parasites of all kinds, haunt his footsteps; he does not always even *see* these robbers at their work; he traces them, like the march of other marauders, only by the fields they have laid waste, the food they have destroyed; just as, in the subject of this paper, the enriching gases and soluble matters of the manure unnoticed steal away to perhaps carry disease and discomfort to places to which they ought rather to have conveyed fertility and happiness.

THE CONSTRUCTION AND MAINTENANCE OF FARM ROADS, WITH SPECIAL REFERENCE TO CLAY LANDS.

A road is an open space or extent of ground that is ridden over or trodden upon, for the purpose of reaching a certain place or object, in order to perform a specific intention. These purposes being frequently performed, require the access to be constantly open, and maintained in condition for the necessary use, and that it be arranged in unison with the work that has to be executed. The means of communication was an early discovery, and a very prompt adoption by civilized nations; and from the transportation of armies, the necessity was soon obvious in every conveyance of social intercourse. Hence the means of communication holds a chief place in the list of provisions for the advance of improvements in countries, districts, parishes, and on estates of landed property.

The highways of a country and the streets of a town are devised for a public purpose and an extensive use. The roads of a farm and the walks of a garden are of private utility, but are of the same plan and construction, devised with the same view and to serve the same object. The single purpose is to afford access to places that are required in use, and a communication for interchange of performances; it must be open at all times, and ready for application.

The roads of a farm, which is a quantity of land employed in a cultivated use, afford a passage from the farmery to each field of enclosure, and into the highway of the country which will intersect the farm. The shortest and most convenient passage must be adopted; and, as experience has shown the oblong-square field of land to be the most eligible shape, the roads will be directed in a similar straightness, and follow the lines of fences that divide the grounds. Straight lines are always preferable, but sometimes debarred by the surface of the ground and other obstacles.

Three considerations govern the roads of the farm: the direction, the construction, and the maintenance. The public highways that pass through the farm will cause an attention to the lines of private roads, and as the access leads to these highways before reaching the farmery, a diversion will be created in order to comply with the local positions. In general, the private road leads from the farmery to the field by the shortest line that can be found, and alterations must be made for this purpose, if it was neglected when the fences were raised for enclosing the grounds. Every field of land must have an ingress from a road without a passage to it through another field; it must communicate with the road by its own gate, and have no dependence on any other passage. This convenience has not been sufficiently attended to, and has been very generally neglected; but it is equally necessary with the provision that each room of a dwelling-house have an entry from the passage without intruding through another room. This very necessary arrangement requires that a road passes between four fields in width, with two fields on each side of it, which open into the roads from opposite sides, and it is convenient that the gateways terminate the headlands of the field, and have an entry at both ends—on the upper and lower headlands. Much inconvenience attends a road passing through one field into another field; gates are left open from want of care, and admit intrusions; wet weather sinks the passage; and when a hard road is made for the purpose, the grazing cattle congregate at the gateways and cause destruction; the portion of land is lost for use, as it is occupied for a road of passage. At the same time, a gate must open from one field into another, for the purpose of convenience, but not for a common thoroughfare, and best at the ends of the fields, and in the line of the headlands.

The construction of roads rests on the formation of the bed, and the materials which compose the path of communication. The frequency of passage not being very large on farm roads, and the meetings not being very numerous of the vehicles in use, the width of twenty-four feet will be sufficient—twelve feet for the passage track, and six feet on each side of it to serve as sides or shifting grounds, and travelling paths. A hedge or fence of some kind, enclosing a field, will run along the side of the road, and at its base a shallow ditch or excavation will receive the water that is thrown from the road, and discharged by a longitudinal declivity. The bed of the beaten road must be placed on a dry and firm foundation, as upon that provision the whole safety of the road depends, and rests upon its stability as an upholding stratum. If, by any possibility, a road of materials can be placed on turf or grass land, that bottom is by far the best foundation that can be procured, as the matted surface, being closely interwoven with fibrous roots, presents a floor of all others the best qualified to resist the pressure of the materials. The general custom excavates a trough in which to place the road on the soft underground, being akin to the universal method of raising a mound in which to plant a hedge, whereas both designs require only the simple process of being placed on the surface of the ground—the materials of the road on the grassy turf, and the thorn quicksets on a sloping turf, with the end touching the ground, on which the rootlets will spread and search for food after issuing from the lower end of the set.

When a road has to be made over soft grounds—clays and wet earths—turf, of the most matted sort to be found, must be carried to be placed in the foundation, closely and firmly joined as in the original position, and presenting a level surface to receive the hard materials. When the turf cannot be procured, the bottom must be laid with dry, coarse earths, gravels, broken stones or chalks, or any dry, coarse materials. The bottom must be dry, or made dry by longitudinal drains—one on each side of the crown of the road, with a cross drain in each hollow that may occur; such drains to be filled to the top with the materials of the road. The bottoming of the road must also be thoroughly dry, and in depth of about two feet, as the nature of the underground may be seen to require. Comparatively dry substrata will require about one foot of dry materials; wet grounds of all kinds will require about two feet; while some shallow earths will afford, on being removed, a dry, hard bed for the road without any intervening materials. These situations are not the most common, so that the previous directions will generally apply, with the repetition of the essential conditions that the bottom of the road be dry, both in the natural deposit and in the articles that are used as a foundation, and that upon this provision the entire safety and value of the road depend.

The bed of the road is formed in the width of twelve feet, and the depth of one foot, between the sloping sides of six feet in width, and level in the bottom, of dry, coarse materials—rough, but not large—and concreted to form a resistance. On this foundation is laid a stratum of hard stones, broken in size not larger than a hen's egg, sloping from the crown of the road over the grassy sides with as much declivity as enables the water to flow to the side-ditches. Where roads fall longitudinally, the water will escape in that direction; but when level or nearly flat situations prevail, it is requisite that the roads are convex, to throw off the water sideways; and the declivity may be slight, and not impose much trouble in forming and maintaining the position. All hard materials of roads must be broken into a small size—the smaller the better—as there are afforded the greater number of angular points, which enter into combination, and proceed to form a solid mass of re-united junctions, which resist pressure, but yield to weight so far as to remove the severe jolting that is experienced from a passage over original and unreduced masses of rock. The best materials are got from quarries, as the edges are angular, and, on being broken into small pieces, the points are increased, and are soon united into a road. On the other hand, boulder stones and gravels, field stones, and water-worn stones from the beds of rivers, are rounded, and, on being broken into pieces, preserve the roundness at least on one side, and are consequently less inclined to enter into combination when placed together as the materials of a road; still the articles must be used, as, in many places, none other are to be found. The best materials are afforded by the schistoze rocks of mica and clay slate, and some variations of the primitive rocks, as limestones and the hardest sands; the decomposing trap afford a most excellent road metal, and all these and similar rocks are pointed and angular, yielding that first qualification as material for roads. Water gravels are not eligible, as the rounded pebbles do not coalesce into a firm compactness, but remain loose, and roll about on the surface of the road, and require to be broken, although formed originally in the medium size of bruised stones. Earthy gravels that are dug from pits and quarries are sometimes found in size to be fitted into a compact bed, owing to the cementing matters of the earthy mixtures; but much oftener the screen separates the small portions for the walks of the garden, and the large parts are broken as boulder stones into road metal. Very small gravels are occasionally found, or rather the comminuted debris of rocks, which make very good roads, and which experience soon perceives. When gravels require separation into large and small parts, the labour is equal to that of quarried stones; but these last not being got, the next best must be used.

When the body of the road has been formed with a stratum of broken stones a foot in depth, compactly placed and neatly finished, it is advantageous to spread over the surface a quantity of coarse earth, gritty sand, screenings of gravel, or dry clayey earth, which fills the interstices, and serves as a cement to bind together the loose portions of the broken rock. Very much benefit is derived from this application; the rains dissolve the matters, which spread into the crevices, and place the stones in a bed of compost. And after rains, or during rains, at least, during wet weather, the newly-made road must be repeatedly rolled with the heaviest implement of the kind, which presses the stones into position, and commences the formation of a consolidated mass: the operation of rolling must be unsparingly applied. For some time after the road is used, ruts will be cut by the wheels of vehicles, and these are to be carefully filled, by pulling into the cavities the sides of the ruts as often as formed, and the wheels must be prevented from following one track, by placing large stones on the path which is to be prevented, and removing the stoppages from one side of the road to the other, as may be required. The width of twelve feet will afford room for this change of track on the roads of the farm, as the traffic is limited, and the meetings of vehicles not very frequent, which require a larger width. Narrow roads are exposed to the very great objection of the vehicles following in one track, and inflicting much damage. By filling the ruts and changing the tracks, a uniform and evenly-worn road will be obtained, with attention, on a farm road of twelve feet in width.

The roads of the farm are part of the furniture that is provided for the use of the land in cultivation, which is let for a yearly value of the articles that are understood in the agreement. The provision of the roads rests with the proprietor of the land, who inherits the permanent ownership, and also derives a revenue from its use. The maintenance of the roads is a burden on the temporary occupier, who derives an advantage from the use of the communications, and must consequently incur an expense to uphold the condition. The roads must be put into the full condition of tenantable use, along with the houses and fences; and the tenant is covenanted to uphold them in a sufficient state, always excepting uncommon accidents and total decays. The stones gathered from the grass fields of the farm will afford a greater or less supply of materials; rocks may be quarried on the farm, and gravels may be found; and if not on the farm, or on the estate of land of which it forms a part, an access may be procured (or purchased) to the materials on some adjacent property. The gatherings of the farm must be laid in convenient places, and prepared by breaking; rocks must be quarried, and gravels prepared at the most vacant times, and laid upon the failing roads during wet weather, the surface having been previously loosened by the pickaxe, in order to effect an easy junction between the old and new materials, the quantity applied being always sufficient to raise the low places of the road in the proper height, as marked by the fixed position. This repair of roads must be constantly performed, and when the faults appear, and before any serious damage occurs, both to uphold the road as an article of furniture, and to obviate the damage to the animals and vehicles which constitute the farmers' use of the road: for this purpose, the materials must always be prepared in readiness, and every proper opportunity embraced for the application. The roads of the farm must have a special notice in the lease of the land that is let, and the maintenance subjected to the same conditions as the houses and fences of the farm. At the time of agreement, there will be understood the finding of the materials on the farm, in pits or quarries; or if there be not any, the access will be mentioned on any other farm or estate adjoining. If not put into writing, these attachments will be verbally understood, always with the tacit provision of the gathered stones from the land; but the due upholding of the roads should, and must, be imperatively written.

The special case of clay lands being provided with roads merely demands the repetition that all soft undergrounds, as clays that are deep or shallow, wet earths that are soft by nature, and on all bogs and peats, the bottom of the road, if not possibly made on turf or a grassy surface, be laid firmly and compactly with turf carried for the purpose; and where turf is not obtained, that a deep layer be made with gravels, coarse earths, stones broken into a small size, decomposing rocks, and similar gritty matters; that the foundation of the road be made dry, and that the broken stones of the upper bed never can sink or penetrate to the earthy bed of the original deposits. A thick stratum must intervene, on which the road properly so called rests as a foundation, which must be dry in every part of it, in the original bed, and in the materials that are applied; these requisites are essential to any good roads being made and maintained.

Most failures in road-making have arisen from not having a foundation of depth and dryness sufficient to prevent the road being sunk into the under-stratum of original deposit, and to uphold the upper pressure from sinking the broken materials into the foundation, and getting mixed together. In this way, both the foundation and the road are lost from being too scanty; the one sinks into the other, and no part is sustained to form the desired object. The foundation must be calculated to sink so far as to find a resting-place, on grounds that are not very bearing of pressure, and which remain soft after being drained; the thickness must be sufficient to prevent any extensive mixture with the under-deposit. With the upper bed of broken stones, no sinking must take place; the strength and dryness of the foundation must prevent any mixture, except the sinking that will happen from the pressure of the rolling weight. This will not be large, when the directions are observed of a dry bottom and thick foundation, and the proper broken materials, all duly provided and economically applied.

THE IMPEDIMENTS TO THE ADVANCE OF AGRICULTURE IN FRANCE.

If the art of agriculture needed any proof of the paramount importance it possesses in the economy of society, a very striking one might be adduced from the jealous anxiety and care manifested by all the ruling powers, in respect of questions and measures bearing upon the food of the communities over whose destinies they preside. Happily for us, that great interest is finally adjusted in our country; and no one can say but it has hitherto worked satisfactorily, either from its own intrinsic merits, or from a concourse of favourable though may be fortuitous circumstances.

In France a different principle has been acted upon. A complete liberty is established on one side, whilst on the other a strict prohibition is maintained; or in other words, foreign agricultural produce is admitted free, or next to free, whilst native produce must be sold and consumed in the home markets.

It is now seven years since this policy was introduced, and a fresh decree, dated from the camp at Chalons, prorogues these regulations to the 30th of September, 1858; so that, up to the expiration of that period, corn of every description, potatoes, and even chesnuts grown upon the French territory, cannot be exported. Even grain reaped upon French soil cannot be distilled.

At first sight this regulation appears both unjust and impolitic, for nothing can be more unfair than a partiality, which opens the market to foreign produce, and prohibits the export of native; but after a little calm consideration, the measure must appear harmless, inasmuch as it scarcely can exercise any effect whatever upon the market. For if there is plenty at home, cheapness must ensue, and the market from its low rates cannot encourage foreign produce to appear; and as long as the demand is equal to the supply, the native produce always finds a ready local market, at a price which freedom of export could not enhance. It would be in the case of an extraordinary superabundance alone that the opening of the ports should be made free, after a certain provision for the contingency of barren years had been effected, in order to give an outlet to the overflowing plenty of a good harvest. But such a contingency, likely as it might appear, from the enormous surface of cultivated soil, and its natural fertility in France, is as remote as anything can be.

Hitherto the French Government have confined their efforts to mere external measures, tending to stimulate progress among agriculturists by means of liberal prizes at district and general shows, rewards in the shape of medals, crosses of the Legion of Honour, pieces of plate, and so forth. But it is only land proprietors and amateur agriculturists who have vied for these honours. The mass of the farmers have remained inert, as if these solemnities, these prizes, these rewards, had nothing to do with their class, and were solely intended for their betters. Prejudice, ignorance, and poverty weigh them down as a ponderous incubus, which mere external and mediate remedies will never remove, and which the exclusive protection so carefully bestowed upon the manufacturing interest—a protection which tends to enhance the price of all the raw materials of agriculture—is only rendering heavier and more stedfastly fixed every day.

A few instances of the difficulties with which French agriculture has to contend will suffice to illustrate the foregoing propositions. A recent tour and a lengthened stay through the principal agricultural districts of France have enabled us to collect facts, the authenticity of which we can safely guarantee.

In the first place, the leases are so framed, so clogged with senseless and mischievous restrictions on the part of the landlords, that the wonder is there are tenants to be found to accept their terms, and that crops, sufficient to pay the rent, can be grown. Will it be credited in England that in many districts, especially in Normandy, one of the most fertile and enlightened provinces of France, there are to be found leases strictly forbidding the cultivation of root crops, and making ploughing at a greater depth than three inches a breach of covenant, liable to instant discharge and other penalties. The effect of this is that the land, generally undrained, remains weedy and stiff; the unfortunate farmer is obliged to plough it in high ridges, merely scratching the surface, except in the furrows, where, to obtain an open drain, he pares off the sod, and throws it back again upon either side of the ridge. Owing to the high price of iron, so jealously protected by the French Government, the harrows used are of the rudest and most inefficient description, and are entirely made of wood. The rollers are sometimes made of stone, but generally of wood also; and the ploughs themselves are rarely made of iron, the mould-board being generally made of wood, the share being alone furnished with iron.

English implements, owing to custom-house restrictions, duties, and annoyances, are next to prohibited, the expense attending their import being nearly equal to 25 per cent.

As regards manure, the peasants, as a rule, never buy any; in fact, they cannot do it. Still their flocks and herds do not supply them with a sufficient quantity. The effect of this is plain enough. Their lands become more and more impoverished; and not having the resource of root crops and artificial manures, they are obliged to fallow their lands, which, being neither ploughed-up nor drained, are soon covered with a closely-netted web of various herbs, upon which they graze their cattle; so that their land is even debarred from the benefits of the fallow system.

The use of salt as manure is a matter of utter impossibility in France; that substance is the object of a high monopoly on the part of the State, and is so dear that it is an item upon which the economy of housewives is duly exercised. There is a law, however, which relaxes the grasp of the monopoly in favour of agriculture; but although that law has been many years in existence, it has never come into operation, from the endless formalities rendered necessary by the jealous interests of the revenue—formalities which, by the loss of time and annoyances they entail, are more expensive than the commodity itself at the usual price of the monopoly. A farmer in the neighbourhood of Paris, having once applied for salt at the reduced price, to administer to his wheat, which invariably lodged every year, was coolly told to send for it at Bordeaux, where there are depôts of the refuse of the fisheries—a substance doubtless better as a manure, yet unsuited to his purpose, and, besides, absolutely beyond his reach, from the expenses of transit from so great a distance.

Can it be wondered at, after such disclosures, that the French tenant-farmers, as a class, are so inferior to ours in respect to education, manners, means, and abilities? They turn within a circle of ignorance and misery which a fatal system closes around them as an insurmountable barrier. They toil from generation to generation without any immediate prospect of bettering their condition. They must sow their land without being placed in a position to buy manures, or cattle to make it, or improved implements to counter-balance the increasing deficiency of labour, and to husband their land as it ought to be. Under such circumstances the strictest parsimony must govern all their operations, to be enabled to maintain their families and pay their rent—a parsimony which banishes comfort from their hovels, flesh meat from their repasts, education from their offspring, cattle from their stables, harvest plenty from their barns, and leaves them a race of Pariah slaves, coarse, ignorant, and poor—easily distinguished from their fellow-men by their low countenance, their rude dress, their uncouth language, and that vulgar cunning peculiar to degraded menials. And yet they are a highly-moral, patient, and enduring race. When properly trained by civilization and discipline, they are capable of greatness and heroism. They form the bulk of the armies of France, and have shown on a thousand battle-fields that the blood that flows in their veins is neither base nor degenerate. But the position which French manners and legislation have made them is a fatality which enthrals them, and renders them incapable of rising and progressing. In all parts of France the land proprietors, with whom we have conversed about agricultural progress, have invariably pointed at this stubborn ignorance and incapacity of the peasantry as the great stumbling-block to improvement in agriculture; for they are not only indifferent to progress, but secretly inimical to it. A new method, a new breed of cattle, a new implement, becomes at once the object of their passive opposition. They affect awkwardness and ignorance, and not unfrequently testify their opposition by destroying the object of their enmity.

Many land proprietors have even been deterred from entering into the management of their own land at all, or according to the principles of improved systems, from the representations of men in whom, being inexperienced themselves, they placed a blind confidence. French landed property is so heavily taxed (about 15 per cent. of the gross income), that, owing besides to its great division, it becomes a matter of vital importance to a proprietor to secure the rent of his land; for whether he receives it or not, the tax must be paid. Hence the diffidence and hesitation with which landed proprietors generally enter into agricultural pursuits. No doubt many failures are to be ascribed to that timidity. Proper outlay is eschewed, and half-measures resorted to. The result is unavoidable. Discouragement ensues, and the attempt is abandoned, to the great detriment of the cause of progress, and to the triumph of the routine and ignorance of the delighted peasantry, who point at the failure as a powerful argument against every kind of innovation.

NOTES ON NOVELTIES AT THE AGRICULTURAL SHOWS OF 1857.

By Robert Scott Burn.

1.—THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND. Meeting at Salisbury, July 21, 22, 23, and 24.

2.—THE HIGHLAND AND AGRICULTURAL SOCIETY. Meeting at Glasgow, August 5, 6, and 7.

3.—THE YORKSHIRE AGRICULTURAL SOCIETY. Meeting at York, August 6 and 7.

As first in point of date, and decidedly first in point of importance, we commence our paper with a notice of the more striking of the novelties of the meeting of the Royal Agricultural Society at Salisbury. This has undoubtedly been the first in point of excellence of all the Shows of the Royal Society which have yet been held. It has been decidedly successful, and this not from any adventitious aids which the archæological attractions of the city in which the Show was held, the hospitality of its citizens, or the glorious weather which prevailed at the time, might have accorded to the great gathering, the high feast of the Genius of Agriculture. It was entirely a legitimate success, dependent upon none of those aids we have already alluded to, but upon its agricultural merits alone. At no meeting has there been such a full collection of implements, or such a splendid show of live stock, as at this. Nor is this to be wondered at: all improvement is progressive; the feeble attempts of infancy but tend to cultivate the habits and enlarge the faculties which lend strength and vigour to maturer life; and the tiny Shows of bygone years, which but afforded lounging places to an indifferent public, or an opportunity for the incredulous and the "slow" to indulge in sneers at "newfangled notions and graceless innovations"—each gathering fresh experience from its predecessor—have resulted in those gigantic combinations, which alike please from their novelty, and teach lessons of practical worth from their utility, and of which that recently displayed at Salisbury has been the most remarkable. Nor although the last few years have witnessed such marvellous strides towards perfection—of which each succeeding show has been the exponent—need we look forward to our speedily arriving at the culminating point; with such a wondrously expansive science as that of agriculture, we still progress towards a point which each year may to us seem like perfection, but which experience shows us is as far off as ever. Much has been written and more has been said about the uselessness of these shows; but while freely admitting that there may be and is much to reform connected with them—that the *prize system*, to wit, may cause merely spasmodic efforts, which have the appearance of life, but are in reality dead; and that the *implement trials* might, with benefit, be made to have as much reality as they have now of name, and of real work and less of play about them—still we think that the services rendered to the cause of agricultural progress, by the holding of stated agricultural shows, have been neither few nor unimportant. They may be termed bazaars merely; but granting they are this and "nothing more," in bringing men to them we enlarge their ideas; we rub the rust off them by contact with other material; and truly he who rubs shoulders with his fellow-men in the world's busy marts, has a better chance of becoming world-wise, and "getting up to a thing or two" likely to be of use to him, than he who sits at home, "contented wi' little," but with an unfortunate indifference to the possession of "mair." And surely he has little chance of getting in a good stock of the *newest* and the *best* of articles, who sneers at the utility of going to a full market, but puts up at the nearest huckster's shop. We can scarcely conceive of the dullest fellow who ever trod in "high-low" or sported "smock," walking through the alleys of an agricultural show without having some new thoughts awakened, or some slight desire to know what it was all about. And the slowest farmer might well be inclined to ask if none of the implements he stood gazing at could be of use to *him*, and whether *he* could raise and rear such mighty cattle, or such gigantic sheep, as rouse his wonder. For spreading knowledge, it is a great matter to rouse curiosity and incite to inquiry. Our shows have done this good—the amount of which it is difficult to estimate—they have roused curiosity and stimulated inquiry. If they have not taken the high position and assumed the positive usefulness of a guide-book, which points out the pleasant spots on the road to be visited, or the dangers to be avoided, they have at least acted as finger-posts to indicate the direction in which the traveller may quickest and most economically arrive at his destination. And this, though apparently a humble, is in reality—we perpetrate no pun, good reader—an exalted position to occupy. With these introductory remarks, not altogether unsuggestive we hope, we now proceed to detail some of the more striking novelties which were displayed at the Salisbury Show.

Some of our readers may not be aware that, so far as the trial of implements and machines was concerned, a very important change of procedure in the routine of proceedings of the Royal Agricultural Society was inaugurated in 1850. Up to that year it had been the custom to have the trials—and consequently the prizes awarded—extended over all the vast range of implements and machines indiscriminately. This plan, in the early years of the Society, did not result in much inconvenience, from the paucity of examples exhibited; but as agricultural science progressed, and its mechanism received a corresponding stimulus, the number of implements and machines increased amazingly, till at last the inconveniences attendant upon the trial of the whole range of agricultural mechanism indiscriminately became so striking, and resulted in decisions so unsatisfactory, that it was wisely determined to limit the trials of each year to one class of implements—leaving the other classes to remain for exhibition merely, without any reference to prizes. For this purpose the Council adopted the plan of triennial trials; the classes being divided as follows—

1st, Implements for tillage and drainage.
2nd, Machines for the cultivating and harvesting of crops.
3rd, Machines for preparing crops for market and food for cattle.

The first class was tried last year at Chelmsford; the second came into rotation this year at Salisbury. The class embraced drills, manure distributors, horse-hoes, hay machines, mowing and reaping machines, horse-rakes, carts and waggons. To the list of prizes for these was added a special prize of £500 for a steam-cultivator.

This special prize last mentioned may be said to have been *the feature* of the trials. Cultivation by steam is a matter on which, for many reasons, public attention is fixed, and the trial for so handsome a prize was likely to create much interest. The prize was announced in terms as follows: "For the steam-cultivator that shall, in the most efficient manner, turn over the soil, and be an economical substitute for the plough or spade." The reader will here notice an ambiguity of statement, which is apt—indeed is likely, as recent events have shown—to lead to grave misunderstanding. We would here have the reader to note the marked distinction that exists between the terms "steam-ploughing" and "steam-cultivation." The first is definite beyond any misunderstanding; it simply means the application of a new power to an old implement, the plough, the peculiar characteristic of which is, that the soil is laid over in slices, all at a definite well-known angle. This is ploughing, and only one implement we have can perform it. This precision of meaning does not apply to the term "steam cultivation." This may include operations from the simple ploughing, down through a variety of gradations, to that of harrowing or pulverizing the soil. It may include ploughing; and it may also, nay does, include rotary cultivators and steam digging-machines. To a neglect of the obvious distinction between the two terms may be attributed the vagueness and uncertainty of the announcement of the prize offered by the Council of the Royal Society. As given, it seems as if its framers had been disposed to please at once the two great parties —the advocates of rotary cultivation, who have doomed the plough to a speedy death as old and effete; and those who think the plough the best implement, and that it only requires a new power to make it perfect. The result of this attempt might, however, have been practically to exclude all parties who used the plough; for it is difficult to conceive how one thing can be a substitute for the same thing—a plough for a plough or a spade for a spade. The work done by either is definite in its character, no matter by what power the implement is worked. Had the announcement been simply "for a cultivator worked by steam for properly preparing the soil" for the after-process of farming, or had the words "economical substitute for the plough as worked by horses, and for the spade as used by manual labour," been used, all doubt would have been removed, if indeed it had ever arisen. As it is, misunderstanding is very likely to take place.

The competitors for this great prize were four in number—Boydell, Williams, Hall, and Fowler. It militates nothing against the principle of steam-cultivation to say that the result of the trials has been a disappointment —has, in fact, put back steam-cultivation in the estimation of many who were disposed to be sanguine as to its triumphs. The fact is, too much has been expected of it. In the ardour of anticipation its transition state has been overlooked. It is but the sheerest folly to expect that a new thing can be a perfect thing. Had Fulton, when his steam-boat moved from the wharf, no doubters around him? and when the engines refused to work, and left him awhile motionless in the stream, did no doubters then laugh loudly?—to laugh afterwards, to be sure, as many since then have done, the wrong way, when steam navigation was an accomplished thing, and when the waters of the Atlantic, as well as those of the placid river, were paddle-ploughed. This failure of steam cultivation—for the most sanguine cannot call it a success—has not made thinking men lose faith in its ultimate accomplishment. We do not say that it will be accomplished by any of the methods now before the public; but that the giant power of steam will some day or other be used easily and economically for the cultivation of the land, we decidedly believe; in this we but think with many of our eminent engineers; to think otherwise would indeed be a libel on the mechanical genius of the day. What is wanted is mechanism which can be taken out at any time to the field by the ordinary farm-labourer, without involving much hard work or difficulty in locomotion—mechanism which will do its work without necessitating continual repairs, or the attendance of a party possessed of more mechanical ability than usually falls to the lot of farm-servants. This is what is wanted, and is certainly what has not yet been brought out or effected by any single inventor. What a combination of the results of the labours of all the inventors would effect, it were hard to say; we are inclined to think that this combination would go far to realize the essentials of a good system of steam cultivation. Inventors are not, we are afraid, freed from jealousy which tinges many a cheek; and to effect the fusion of interests necessary to obtain the above combination, might test diplomacy as much as in the celebrated case of Lumley's *pas de quatre*.

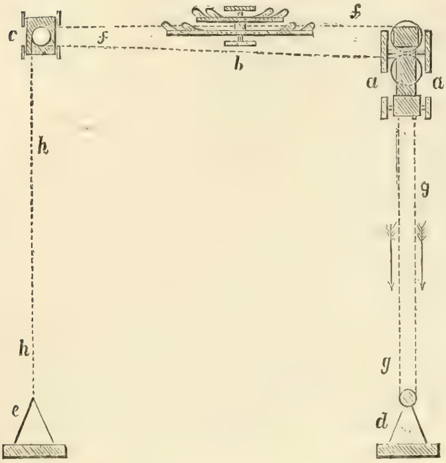
Of the four plans competing, two were on the plan of "direct," two on "indirect" traction. Of the former class, Boydell's was the most successful. It undoubtedly possesses wonderful power of locomotion. It left the show-yard with its tank of water, and ascended to the trial field, which was situated on the top of a high hill, with apparent ease. Some idea of the difficulty of the task may be obtained when we mention that the rate of ascent up the incline leading to the trial field was one in seven and a half. In ploughing, the engine dragged after it six ploughs, each with an attendant—a clumsy enough arrangement, and which, whether from the fault of the attendants, or the construction of the ploughs, or the nature of the land, we do not now say, executed but indifferent work. It also dragged after it, at another period of the day, one of Coleman's large cultivators, with 11 tines, and which requires in ordinary circumstances from 14 to 16 horses. The work was said to be well done; but, in commencing operations, we saw an amount of "tinkering"—this is the most expressive word we can use—and a lack of preparation, which no farmer would tolerate in his field in everyday practice. There can be but one opinion as to the efficiency of Mr. Boydell's engine in overcoming obstacles and traversing difficult ground; its capabilities as a substitute for horses in ploughing will raise a diversity of opinion, many by no means favourable.

The principal peculiarity of Mr. Hall's direct-traction engine is the employment of high-pressure steam-power 300 to 400 per square inch. The engine is provided with expansion gear, which enables the steam to be cut off from 1-18th up to half stroke. The result of the arrangements is an exceedingly light and economically-worked engine. Mr. Hall applies Boydell's endless railway to his engine, and intends to apply a plough of his own invention.

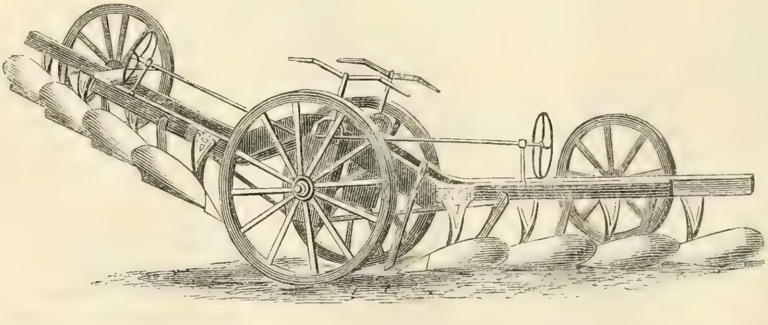
Of the two plans on the indirect-traction system—namely, Mr. Williams' and Mr. Fowler's—the latter was decidedly the most successful. The work we saw performed by it was satisfactory, and it was very quickly performed. After the engine and plant were dragged—at the expense of no small labour and time, however—into position, the work was gone through in such a business-like manner that fairly redeemed the trials, and retrieved somewhat the character of steam ploughing. Although much has to be done to simplify the arrangements, and place the mechanism adopted within the easy range of ordinary farm skill and intelligence, still we think, of all the plans yet introduced, this of Mr. Fowler's is the most likely to succeed, and presents, at all events, many features of business-like utility. Mr. Fowler has done more, we think, in steam-ploughing, and on a commercial basis—that is, ploughing by contract—than all the others put together. We heard a well-known farmer, who farms very largely in a district where Mr.

Fowler has already ploughed by contract, say that, if the plough returned this autumn, he could find as much work for it as it could go through, so well pleased was he with its performance. As many of our readers may not be aware of its peculiarities, and as those who do know of them will be glad to hear of the recent improvements introduced by the inventor, it may not be amiss to sketch briefly an outline of it principal features. The following diagram will illustrate the disposition of the mechanism in the field, with the mode of its operation.

Fig. 1.



The engine and windlass combined are placed at *a a*, and are moved at intervals along the field in the direction of the arrows, a distance equal to the breadth of 4 furrows. There are two drums or windlasses worked by the engine, which alternately wind up the wire rope; while one is being driven by the engine, the other runs free, and is giving out its rope—the rope passes round a pulley or sheave in the anchor *c*. The fixed anchor is at *d*, and serves as a point of resistance, by which the engine winds itself forward. The "self-adjusting" anchor *c* is placed opposite the engine *a a*, at the extremity of the furrow-line. This is moved along the field coincidently with the engine as the ploughing progresses. This self-adjustment of the anchor *c* is a recent improvement, and is effected by the passing of the wire rope *f f* over the drum of the anchor, working a barrel, round which a second wire rope is coiled, the extremity of this being fixed in the ground at *e* to afford a point of resistance. The anchor is mounted on sharp-edged discs or wheels, which cut their way slowly along the ground. The plough-carriage *b* traverses the space between the engine *a a* and the anchor *c*. The whole arrangement forms a parallelogram, the breadth of which is equal to the distance between the engine *a* and anchor *c*, which are placed at the headlands—and the length equal to the distance between the engine and the fixed anchor *d*. For want of space the diagram shows a square. The wire rope *f f* is prevented from dragging over the land by being placed over a series of grooved pulleys or wheels, placed at intervals along the line of draught. Each pulley is supported in a light wooden frame furnished with handles; and as the plough frame *b* approaches one of these light wheel-frames, a boy removes it out of the path of the plough; and after it has passed, he places the return rope, which is attached to the hinder end of the plough-frame, over the wheel or pulley. On the plough-frame reaching the headland, it is moved a little beyond the end of the furrow, and tilted up, thus taking the ploughs which have been last in action out of the soil, and placing the others in contact with it. The engine *a a* and anchor *c* have at this point been moved along the field a distance equal to 4 furrows—and the wire rope *f f* being already placed in the pulleys of the light wooden frames above mentioned, the engine is started, and the drum which previously was giving out the wire rope now winds it up, and the plough-frame *b* is drawn across the field—eight furrow-slices have thus been ploughed over in two journeys of the plough-frame. The plough-frame is shown in fig. 2.



The trial of the reaping and mowing machines resulted in bringing out what was undoubtedly the principal novelty of the Show—namely, the American Eagle Reaping and Mowing Machine. This is the invention of A. H. Caryl of Sandusky, Ohio, and was exhibited by the English agent, Mr. H. Clayton of the Atlas Works, Dorset-square, London. This machine took the first prize as a grass-mower; and from the simplicity of its moving parts, its light draught, and easy adjustment in overcoming obstacles, it attracted great attention. The framing is carried by bearings upon the axle of the main carriage wheel; preceding which the pole is placed, while the driver sits behind. By this arrangement the whole is balanced, so that no more weight bears on the neck of the draught-horses than is necessary to steady the movement; and by merely pressing with his foot on the hind part of the framing, the driver, with amazingly little exertion, is able to raise the cutter a height, if necessary, equal to eight inches—thus overcoming all obstacles, and clearing the furrows. The principal features, however, are the driving and cutting apparatus. This machine has virtually a double set of cutters, the upper ones reciprocating at a much slower rate than is usual in other machines, while the under ones are stationary, and, projecting an inch beyond the line of the upper ones, act at once as guards and cutters. All the blades, both of the upper and lower series, are independent of each other, and each is connected with the bar by a screw-bolt. This arrangement enables a broken or disabled blade to be easily removed, and a perfect one substituted. The upper blades are held down by a spring pressure bar, so that the operation is similar to that of shears, the grass being cut between two edges. The cutting-blades are made of iron at the back, and the front or cutting-edges of the best cast-steel. The iron giving strength, the steel can be made as hard as desired. The driving gear is amazingly simple, and contrasts favourably with that of other machines, there being an entire absence of all toothed gearing; a cam, fixed to the end of the cutter-bar, and a series of curved slides in the main wheel, in which the cam works, being substituted. It is difficult, without the aid of drawings, to give an idea of the movement. If the reader will imagine the periphery or tire of the main wheel to have a series of curved apertures cut in it, of equal size, and at equal distances, these apertures being connected with each other by narrow cuttings, thus forming a species of sinuous path round the entire circumference of the wheel—and farther, if he will suppose the cam of the cutter-bar inserted in this path—he will form some idea as to how, by the passage of the cam from the small cut to the large curved aperture, and from the latter to the former alternately, the cam will receive a series of jerks, alternately from side to side, which will thus impart a reciprocatory motion to the cutter-bar, to which it is attached. From the nature of the movement, doubts are apt to arise as to its ultimate economy. Certainly nothing but first-class workmanship will stand the severe test of the mode of operation. As a grass-mowing machine, all who have seen it in operation think it of first-rate excellence, and that it supplies a desideratum long felt in hay-making operations. It is right to state that, in addition to the first prize at the Salisbury Show, it obtained the 1,000 dollar prize in 1856, after a three days' trial, at the Massachusetts Society for the Promotion of Agriculture, U. S.

Of the reaping machines competing this year at Salisbury, that of Messrs. Burgess and Key took the first; that of Mr. Crosskill the second; and that of Lord Kinnaird the third. To Messrs. Dray's, which took the first prize, with high commendation, last year at Chelmsford, no prize this year has been awarded. This reversal of the decision of last year has, as may be conceived, created no small surprise, and has fanned again into fierce combustion the flame of rivalry. The battle of the "reapers" resembles, to compare small things with great, in warmth of debate, and we may add, lack of courtesy, the celebrated battle of the railway gauges. Into the merits of this controversy we have no desire to enter, further than to say, that each of the rival machines presents points of excellence which the other lacks; and we think that too much stress is laid upon the question of the delivery of the cut corn.

Messrs. Burgess and Key have introduced a decided improvement in their reaping-machine. In the machine of last year, a wedge-shape dividing-board was used to bring in the corn to the action of the knives; this, however, did not act properly, and a conical screw has this year been substituted, with marked success It is just the additional movement which has been required to make the Archimedean screw side-delivery complete in its operation. In this machine, as our readers are doubtless aware, the corn, after being cut, falls upon three screws, which are placed across the machine in a direction at right-angles to the path of the machine. The combined action of the reel and these screws finally deliver the corn at the side of the machine in a continual swathe. In Dray's machine, the corn, on being cut, falls on a tipping platform, which, on receiving a quantity of corn necessary to form a sheaf, is tipped up by the attendant, when the corn is delivered to the ground. The attendant uses a rake to bring the corn up to the cutters. Mr. Crosskill's machine, which took the second prize, is a modification of Bell's, with a side delivery and M'Cormick's cutting-apparatus. Of this machine, the judges report that its "work was well done, but the swathe was not so well laid, nor so good and even a stubble left, as by Messrs. Burgess's; and this, we believe, was caused by its not being well adapted to cut across furrows, and to make perfect work; and the scattered straws left in the swathe, we think, were owing to a fault in the construction of the endless-band for the side-delivery. The machine has two men to work it, but cuts fast, though the power required is more than that which is consumed by Messrs. Burgess and Key's machine. Of Lord Kinnaird's machine, which took the third prize, and which is a modified M'Cormick's, the judges report that "it worked well, but we thought the horses were driven too fast for farm-horses; and the machine, although cheaper than those spoken of above, was not to be compared with them for workmanship. The driver was the only attendant necessarily required."

In drills and manure distributors little novelty was displayed. The most recent inventions we described in the March number of this Journal, so that we are now spared the necessity of going fully into the consideration of this department. We noticed a very ingenious eight-row seed-planting machine, possessed of some noticeable features. It is the invention of John Freer, of Rothely, near Loughborough, Leicestershire. The planters are made in the wheel form—sixteen planters forming each wheel. The planters receive and deliver the seed as they roll along. Each planter is provided with a piston, which is placed between the side-pieces or tongues of the planter. The piston has a reciprocatory motion imparted to it by appropriate mechanism, and its end or termination is of such a size as to fit exactly the orifice of the planter, which is about ⅝ths of an inch square. The length of the planter is about 9 inches, the depth or thickness is ⅝ths of an inch throughout, but the width tapers from this size to about double the width at the root. The pistons are connected in pairs by connecting-rods extending across the centre of the wheel, so that the piston of one planter is connected with the piston of another planter on the opposite side of the wheel. The length from point to point of the two pistons is 4 inches less than the diameter of wheel, or the extent from mouth to mouth of one pair of planters; the extent of play, or reciprocatory movement of the pistons, is therefore equal to 4 inches. At the root or widest end of each planter a hopper is formed, the mouth of which opens in the direction of the planter point. When the mouth of the hopper arrives at a vertical position, the seed drops into it, and is conveyed to the root or seed-bed of the planter, where it remains till the point descends near to the earth, when the seed, by its own gravity, falls to the point of the planter; and after the hole is made by one planter in the earth, the piston is pushed down and opens the point of the planter. The seed then drops into the earth, the piston pushing it before it until it leaves the machine; the piston then closes up the orifice of the planter, preventing the entrance of earth, which would otherwise choke or stop it. While the piston of the bottom, or under-planter, is thus falling outwards, the piston of the top, or opposite one, connected to it, is falling inwards, the point of the planter being at the same time closed. The pistons of these two planters remain in the same position until, by the half-rotation of the wheel, the bottom planter takes the place of the top one. The planters in that part of the periphery of the wheel which is moving upwards, are all open, with the ends of the piston flush with the ends of the planters; while in those in that part of the periphery of the wheel which is descending, the pistons are withdrawn, and the planters closed, ready to enter the soil. Knives or scrapers for cleansing the sides and points of the planters are fixed on the hoop between the sides of the wheel. As before stated, the planters are placed in the periphery of the wheel, and are of such a form as to give the wheel a saw or serrated periphery. The method by which the orifices of the planters are opened and closed is simple and ingenious. Each planter has two sides or tongues; one of these is fixed and bent at an angle—the angle being in a position near the centre of the length of planter—the other tongue moves on a centre, and is provided with two curved arms. The face or extremity of one of these, when the orifice of the planter is closed, rests against the face of the extremity of the fixed tongue; but when the piston is pushed outwards, its end comes in contact with the curved end of the movable tongue which rests on the fixed tongue; the two are thus forced out of contact with each other, and the orifice of the planter opened. On the piston, on the contrary, being thrown inwards towards the centre of the wheel, it comes in contact with the other curved arm of the movable tongue, pushes it outwards, and consequently moves the opposite curved arm inwards, and brings its extremity in contact with that of the fixed tongue when the orifice of the planter is closed. The pistons are moved to and fro as follows:—To each is provided a projecting wing or arm; this passes through a slot in the side of the planter—the length of slot being equal to the stroke of the piston; this projecting arm comes in contact with a slide at intervals, which forces the piston up and opens a planter on the one side, while the piston of the planter on the opposite side is forced down, and closes the planter. There are other ingenious points connected with this planting or dibbling machine, such as the seed-meter or measure, which space does not allow us to notice.

"Sigma's" inventions connected with the new method —which has been lately attracting considerable attention —of planting, setting, or dibbling grain, pulse, mangel, &c., were exhibited at the Show by Charles Powell, of Ticehurst, near Hurstgreen, Sussex. We propose at a future period to notice the system advocated by "Sigma," meanwhile directing our attention to the patent depositor, dibble, or grain planter, of which the following is the inventor's description:—Imagine an angular piece of wood, cased in brass and shod with iron, 4 ft. long, from the angles of which project 4, 5, 6, 7, or 8 small steel rods; if I jerk these by means of an upright handle into the ground, and then draw them up without removing the angular piece of wood, every hole will remain open, excepting in very dry sand, and even in this case the steel dibbler, when pushed down again, would thrust any seed that might have been dropped into the hole as far as the dibbler was pressed down; but to make sure, I have adopted the following plan: I have had small brass nozzles firmly fixed to this angular piece of wood (the flat upper surface of which wood forms the floor of the seed-box), which nozzles penetrate half an inch or so into the holes, and, acting as a guide, cause every seed to be buried, and firmly planted by the small steel dibblers. The action of the implement being thus, it is jerked lightly on the ground, which causes the projecting dibblers to penetrate up to the angle; the dibblers, by means of the handle, are then withdrawn, the implement being retained in its position by means of the foot placed on a step; the seed falls into the holes, as many grains as may be thought advisable; the handle is then pushed down again, when every hole will have its allotted number of grains firmly planted. Thirty-four of these operations can, on an average, be effected in a minute—*i. e.*, with a 5-row depositor, or 170 holes—and the work executed in the most perfect manner."

The following detailed description of the constituent parts may give a clearer idea of the construction of the apparatus than the foregoing general description. The trough or seed-box is angular in form; in the front of this five perpendicular holes are bored, equidistant from each other; communicating with these perpendicular holes are other apertures leading obliquely up to the bottom of the seed-chamber. These are the channels of communication between the perpendicular holes and the seed-box. Stretching from end to end of the seed-box a flat bar is placed, the ends of this passing out through apertures in the ends of the seed-box, and its flat side lying in close contact with the floor or bottom of the seed-chamber, in such a way as to cause it to completely cover, provided it were solid, the apertures of the channels leading to the perpendicular holes already described. Holes, however, corresponding in diameter to those in the bottom of the seed-box are bored in this flat bar. Now, by moving the bar from side to side, when the solid part of it comes opposite a hole in the floor of the seed-box it closes it up, so that *all* communication is cut off from the interior of the seed-chamber and the perpendicular hole; but when the flat bar is moved to the side, so that the holes in it coincide with those in the floor of the seed-chamber, the communication is open. The seed-box is provided near each end with a vertical standard, which supports a cross bar or handle, by which the apparatus is lifted. In the perpendicular holes already described, five steel dibbles move up and down; these are fixed to a cross bar running parallel with the top of the seed-box, this cross-bar having at each end a standard supporting a handle, which is placed a little above the main handle of the seed-box. By moving this handle the cross bar with its dibbles is moved up and down; the amount of play on the length of the stroke is such, that when the handle is pulled up to its highest point, the lower points of the dibbles are clear of the oblique holes communicating with the seed-box, and the holes in which the dibbles work. We have now to explain how the flat bar is moved to and fro. Near the centre of the apparatus, a curved lever vibrates in a stud fixed to the side of the seed-box. The long curved arm of this lever passes through a slot in the lower bar which carries the dibbles; the slot being long enough to admit of the lever moving from side to side. In the slot two circular studs are fixed, the end of the lever passing between them. The lower end of the lever is inserted in a slot cut in the flat bar which lies in the bottom of the seed-box. If the long arm of the lever was straight, as the cross lever carrying the dibbles was raised and depressed, it would simply slide up and down between the studs of the slot, and no motion of the lever would take place; but as it is curved, the studs press upon it, and force it to move laterally, which, of course, causes a corresponding movement in a contrary direction of the lower arm; as this rests in the slot of the flat bar it is moved to and fro, alternately covering and releasing the apertures in the bottom of the seed-box. Brushes are placed to come in contact with the upper side of the flat bar, thus keeping the apertures always open.

The cost of a five-row depositor, with which a man can plant about one acre a-day, is £3 3s. The four-row depositor bean-dibble, invented by Sigma, contains four bean depositors, arranged thus—on one side of the implement there are two depositors at 7 inches apart, then an interval of 27 inches for horse-hoeing, and then two more depositors at 7 inches apart. The price of the implement is £3 6s.

Of haymaking machines, the first prize was awarded to that invented and manufactured by William Newzam Nicholson, of Newark. In our article on the Smithfield Club Show, in the March number of this Journal, we adverted to the modern system of working haymaking or tedding machines, namely, that in which two motions are required, the "backward" and the "forward." In the one, the fork, or tine barrel or cylinder, revolves so as to completely throw up and turn over the cut hay; in the other, the forks or tines, as they revolve, simply move or lift the grass turned over by the first movement. In the ordinary class of improved machines the two motions are obtained by the use of an intermediate or third wheel. When the forward motion is desired, the third wheel is thrown out of gear, and the toothed wheel of the main driving-wheel engages with the pinion fixed in the barrel or hollow shaft of the fork or tine-carrying cylinder. When the reverse motion is required, the third or intermediate pinion is thrown into gear with the other two. In Mr. Nicholson's machine this intermediate wheel is dispensed with, thus simplifying the mechanism, and reducing friction, and the power necessary to work the machine, by reducing the number of the working parts. The two motions are obtained thus: the nave of the main driving-wheel is formed of a large cylinder or hollow drum. The cylinder or axle-box contains on one side an annular or internal toothed wheel (*a*)—that is, a wheel with the teeth internal, not external, to its outer periphery; and on the other or opposite side a spur-wheel (*b*) of the ordinary description. These are fixed to, and form a part of, the axle-box. At a point above, and a little to the left of the centre of the axle-box, the shaft or hollow axle of the fork-carrying cylinder revolves, having its bearings on the sides of the axle-box. This shaft carries two pinions, one of which (*c*) engages with the annular (*a*), the other (*d*) with the ordinary spur-wheel (*b*). When the machine is travelling from place to place—that is, not engaged in tedding—these two pinions (*c d*) are placed midway, being kept in position by a simple catch in the shaft between the two wheels (*a b*), so that none of them are in gear. By moving the fork cylinder shaft to another catch, the pinion (*d*) engages with the spur-wheel (*b*), and the forward motion of the fork-barrel is given; by moving the shaft to the third catch, the pinion (*d*) is thrown out of gear with the spur-wheel (*b*), and the pinion (*c*) thrown into gear with the annular wheel (*a*), which gives the reverse motion. In addition to the simplicity of the driving gear, this machines presents other features worthy of commendation. Thus the fork-barrel is raised from or lowered to the ground by the following simple mechanism: The inside cover of the axle-box is lengthened out, to form a long arm or lever; this is terminated with a segmental rack, worked by a small pinion of two or more teeth. The shaft on which this pinion is keyed passes through a hollow stay to the other side of the machine, where a similar pinion is attached, working in the segmental rack attached to the axle-box of the second driving-wheel. By turning a handle fixed on the end of the pinion-shaft, both sides of the machine are raised simultaneously. Hollow tubular iron is used for the shafts, the back rail, the front bar, and the stays; these parts being all united together by casting upon them elbow and T pieces.

Of various horse-rakes exhibited, that patented by Thomas Smith, of Bredfield, Suffolk, is the most recent novelty. There are some points about it particularly worthy of notice. The peculiar feature is the combination of a counterbalance weight with each of the tines, each tine having an independent movement on the central bar which sustains the assemblage. By this arrangement the pressure on the tines can be so regulated that they cannot sink into the land, dragging up and mixing the soil with the hay or stubble, a fault which obtains with some forms of horse-rakes. The leverage by which the tines are simultaneously raised is also worthy of notice, as ingenious in arrangement, and remarkably easily worked. This machine was highly commended. Of machines of this class, the most decided novelty was the horse-rake of Messrs. Marychurch and Sons, of Haverfordwest, Pembroke. This was highly commended "for its peculiar facility in its delivery, being nearly self-acting." The main feature of the machine is the working of the teeth, or tines, by the forward motion of the implement itself. The following is the method patented by the inventors: A strong iron bar, which revolves on its own axis, carries the tines or teeth. On this bar, within the frame, two cranks (*a a*) are fixed; a third crank (*b*) is fixed to the extremity of the shaft, which extends a few inches beyond the frame. The extremities of the cranks (*a a*) carry a bar (*e*), which is parallel to the tine bar, and which passes under the ends of the tines; thus when the bar *e* is raised, the tines all rest upon it. Fixed to and revolving with the main driving-wheel is a ratchet-wheel (*d*). A lever (*e*) vibrates on the pin of the outside crank (*b*) as a centre; this lever is provided with two tongues (*f f*) and a curved end (*g*). A cord is attached to the end of the lever (*e*), and carried by the attendant leading or driving the horse: when required to discharge the load which the tines have collected from the field, he raises the end of the lever (*e*) next him; this depresses the other end, so that the two tongues (*f f*) fall into corresponding teeth of the ratchet-wheel (*d*); as this revolves by the motion of the driving wheel, the lever (*e*) is raised up, and as it works on the crank or pin of the outside crank (*b*) as a centre, it moves this crank (*b*), and as this is keyed to the shaft which carries the crank (*a a*), it turns the shaft, lifts the crank (*a a*), and the bar (*c*) on which rest the tines. The tines are thus raised upwards, and relieved of their load. The tines having arrived in this position, the back of the next tooth of the ratchet-wheel to that in which the last tongue of the lever was engaged, presses against the curved end (*g*) of the lever (*e*), throws it out of gear, and the teeth fall of their own weight. The frame and the teeth may be set to any inclination when the rake is at work, by turning a handle attached to a screw, which works into a nut jointed to the shaft.

The light drag-hoe and hand-cultivator, invented by Sigma as substitutes for the horse-hoe, may here be noticed. The implement is suitable for all crops growing in rows, and is manufacturable in a variety of ways. In one form it is merely a share, of the width of the row to be hoed, turned up at each end, the end one prolonged so as to form the letter V; at the centre angle a goose-neck is fixed into a handle. The share, having both edges sharp, can be thrust backward or forward, the labourer being able to hoe as fast nearly as he can walk. To convert this into a drag-hoe, a weight is placed in the top of the V, which is provided with slots to keep it tight, and a cross handle is provided to the shaft. This cross handle is capable of being shifted up and down, being tightened by a wedge at any point desired. In the third form of the implement, the V-shaped part is made to expand or contract so as to suit shares of sufficient widths; this is done either by jointing them like a pair of shears, or by means of two straight slotted bars. The same handle is suited to this apparatus.

Of the minor novelties not strictly agricultural, space allows to notice one only: that, however, one which has attracted considerable attention, and bids fair to revolutionise practice in the interesting if not important branch of bee-keeping; we allude to the "Platform Bee-Hive," an American invention. In common with other patented bee-hives, this has the convenience of two tiers of four boxes each, so that when one is filled with honey, the bees have access, and will transfer themselves to the other box, the filled box being taken away. The feature which distinguishes Mr. Davis's plan from all others, however, is the provision made for enabling the bees to work all winter without the loss of an hour. This is effected by supplying them with an inexpensive composition, of which the bees are so fond as even to prefer it in many cases to flowers. The platform presents the appearance of a cottage pianoforte, of which the two tiers of hives form the upper part. The projecting portion at the front is covered at top with woven wire-work. The feeding-boxes are below this, and connected by openings with the boxes above. The feeding-boxes contain double floating platforms, provided with narrow openings; through these the bees can sip at will the liquid composition without clogging their legs or wings with it. The dirt or dropping of the bees falls into a space underneath the hives, thus preserving the cleanliness of the hives and the health of the bees. In cold weather the bees are removed from out of doors into shelter, and a temperature of about 75° Fahr. kept up by a stove or a steamer. The hives are provided with glass backs and fronts, through which at any time the bees can be inspected while at work; but as they prefer generally to work in the dark, wooden shutters are provided to obscure the light. As often as it is necessary to give them new comb to work on, the bees can be immediately transferred to another box, thus obviating the necessity of destroying them on the old system. The expense of the composition supplied to feed the bees during winter may be estimated at 1½d. per pound. It may be right to state that this invention, at the agricultural meetings in the United States, took the prize over all other competitors.—From the Journal of Agriculture.

(To be continued.)

DAIRY MANAGEMENT.

BY THOMAS HORSFALL.

(*Concluded from page* 356.)

Quality of Butter.—In January, 1857, samples of about 56 ozs. each of butter of my own, and also of Mr. Alcock's, were sent to the laboratory of Messrs. Price and Co.'s candle works at Belmont:—

My butter was found to consist of (taking the pure fat only)

Hard fat, mostly margarine, fusible at 95 degs.	45·9
Liquid or olein	54·1
	100·0

Mr. Alcock's—

Hard fat, mostly margarine, fusible at 100 degs.	36·0
Liquid or olein	64·0
	100·0

For these analyses of butter the agricultural public are indebted to the good offices of Mr. George Wilson, director of Messrs. Price and Co.'s manufactory. It will be observed that Mr. Alcock's milk is richer in butter, and that his butter is also richer in proportion of olein to margarine than my own.

Professor Thompson ("Elements of Agricultural Chemistry," 6th edition, p. 317) states that winter butter consists more of solid, and summer more of liquid or olein fat.

An analysis of butter made in Vosges, gives—

	Summer.	Winter.
Solid or margarine fat	40	65
Liquid (or olein) fat	60	35
	100	100

In Lehmann's "Physiological Chemistry" (Leipsic edition, vol. ii., p. 329) an analysis of butter by Bromus, gives—

Margarine	68
Olein	30
Special butter oil	2
	100

It will be observed that my butter may be classed as summer butter, and that Mr. Alcock's is the richest in proportion of olein. Both were produced in the month of January.

These results are important, and completely establish the conclusion I had previously formed, that the quantity and quality of butter depend essentially on the food and treatment; and that by suitable means you can produce *as much and as rich butter in winter as in summer.*

From information derived from various sources in the district in which the same breed of cows is kept, the average quantity of butter from milk is somewhat more than an ounce to each quart, or from 16 quarts of milk 17 to 18 oz. of butter. This is during summer, and whilst the cows are at grass.

During the winter season the supply of butter from the dairy-keepers in this vicinity falls off to one-fourth of what they produce in summer.

I am led to infer that there is some misapprehension as to what forms the excellence of butter. On inquiring of a Jermyn-street factor, I learnt that rich oily butter is preferred in winter, and hard butter in summer. This preference to hard butter in summer will doubtless be owing to its withstanding better the effects of heat, and consequently being more palatable.

It seems probable that the higher price of butter, in comparison with that of suet or other solid fat, is due not only to its agreeable flavour but also to its proportion of olein, which is known to be more easy of digestion, and more available for respiration than solid or margarine fat. We find it preferred for pastry and other culinary preparations, in which its peculiar flavour disappears; the essential oil in which this resides being very volatile and easily removed by cooking or exposure to frost.

Olive oil, which amongst the vegetable oils has the greatest proportion of olein (72 to 28 margarine), is much used in culinary preparations, especially on the continent. Any one who has partaken of a beef-steak nicely prepared with refined olive oil in the cuisine of a first-rate foreign hotel, will scarcely detect the substitution of this oil for butter.

The price of refined olive-oil to consumers is about equal to that of butter; whilst that of linseed oil, rape, &c., ranges at from 4d. to 5d. per lb.

Use of Rape-cake.—Having had considerable experience in the use of rape-cake as food for cattle, I offer some suggestions to those who have been less accustomed to it, my consumption of this material for dairy cows and for fattening being upwards of 20 tons per year.

When I first gave an order to the manufacturer with whom I chiefly deal, about six years ago, on explaining to him the purpose for which I required it, he requested time for its preparation, and recommended that I would give him, at the time the fresh seeds arrived, an order to the extent of my requirements for the year. As the quantity I ordered fell short, I sent for a further supply without notice; on its arrival I was not satisfied with its appearance or effects. On making a complaint, I was reminded by the manufacturer of his request that I would give him previous notice. He then explained that his object was to select seed free from mustard or other impurity. Since then I have had no occasion to find fault with the cake from this manufacturer.

A sample of this was found by Professor Way to contain, of

Moisture	8·49
Woody fibre	8·61
Starch, gum, sugar, &c.	37·93
Albuminous matter	31·42
Oil and fatty matter	10·65
Ash	2·90
	100·00

I have occasionally bought German and Danish rape-cake; it is made up in thick square pieces of a rich green colour, and not so hard pressed. An analysis of this by Professor Way gave, of albuminous matter 30 and of oil 13·16 per cent. Until this season I had no grounds to find fault with this foreign cake, but was satisfied to pay for it a higher price, owing to its superior richness in oil. In this season's importation I was led to suspect to some admixture of mustard-seed. On macerating a sample in tepid water, I perceived an admixture of yellow husks, and likewise the smell peculiar to mustard. More completely to satisfy myself, I sent a sample to Professor Way, who reported it to contain mustard.

As dealers now charge a higher price for this material, for food, in comparison with what they charge for it as manure, they are clearly responsible for it being of a quality suitable for food.

To prevent the cake becoming mouldy, I cover it over with shells of oats which have been kiln-dried—chopped straw, if dry, would equally serve the purpose—by this means its flavour is also preserved. Indeed, by keeping for a time, I find it become milder in taste, and more easy to masticate.

Management of Grass-land.—In describing the crops or produce adapted for dairy purposes, I think it proper to notice my treatment of permanent grass, meadow, and pasture. I reside on the borders of a district in Yorkshire, over which you may travel 50 or 60 miles without seeing, except here and there, an isolated patch in tillage, and I am enabled to state from observation, that in this extensive tract of permanent-grass the occupiers depend almost wholly on the excrement of their cattle for maintaining the fertility of their land. Whilst in some of the corn-growing districts the farmers purchase guano or other extra manure at the rate of 20s. per acre over the whole of their holdings, by far the majority of those in the district I am speaking of (from which a continued deportation of cattle and also of dairy produce takes place), depend wholly for manure on the excrement from their stock, and do not replenish with extra materials.

As my own treatment of permanent grass differs materially from this, I proceed to describe it and its results.

My meadows, from their high condition, preserve their verdure through winter; during the month of March, and up to the first week in May, they afford excellent pasturage for ewes with their lambs, of which they carry at the rate of four per acre till the first week of May. Some portion is left untouched by sheep for early soiling, which I usually commence about the 26th of May.

From the 20th to the 30th of June my mowing for the main crop of hay usually takes place. The aftermath is again cut either for soiling or for aftermath hay, so that each meadow is mown twice during the season. After the second mowing a nice aftermath grows, which serves for the next year's ewes, which are bought early in October, and turned on the meadows together with their ram. Soon after the ground is clear, the weather being suitable (I prefer it cloudy or wet), the fresh excrement from the tanks under the tails of the animals is carted on and dressed in. The whole of my meadow land gets a dressing of this once a year. The excrement is quite free from straw. I formerly procured peat soil to mix with to neutralize the smell; but am at present using for that purpose scrapings which are carted on, free of charge, by the conservators of the roads. Both for soiling and as aftermath the grass thus dressed is eaten with relish.

I find little difficulty in getting manure of this kind into the ground. During warm, moist weather, when the absorbent powers of the soil are in full activity, the whole dressing soon disappears. I have known the cocksfoot-grass, the property of which for quick growth as aftermath is well-known, attain a height of 3 feet in five or six weeks after mowing.

In addition to this yearly dressing with excrement, I apply guano at the rate of 2 cwt. to each acre. I do this usually in the spring. I have, however, thought that I derived equal, if not greater, benefit from its application in very wet weather in November. The growth during March was sensibly greater than on adjacent land on which the guano was not applied till April; and the main crop of hay was certainly not less than on that dressed in April.

Mode of Hay-making.—As the process of hay-making differs so much, and is in some districts so inefficiently performed, I venture to describe the method I am using, and to which I give my personal attention. No farm operation requires greater care than securing the hay crop.

Till lately I deferred mowing the grass till it was in flower. In the year 1856 I cut it before flowering time. Though this early cut grass shrinks more in the stack, yet I find it weigh proportionably heavier. It is not unusual for a square yard cut from the solid part of one of my stacks to weigh 30 stone imperial: I have known it exceed this. The solid part of a small stack of aftermath hay from seven acres of this season's growth weighed 26 stone imperial. I find it of advantage to employ a full complement of haymakers. In travelling through the country I have seen but one haymaker employed where I should have half-a-dozen. I find six haymakers, if fully employed, earn their 12s. to 14s. for one day far better than a single man would earn the same sum in six days.

The haymaking or tedding machine has in my practice superseded the expensive operation of spreading by hand. When the grass has been spread a sufficient time, the haymakers turn it with their hand-rakes from the sun or wind. At the close of the day the grass or hay is raked together in rows; the space between each row is left quite bare. In this state it remains overnight, to prevent the bleaching effects of the falling dew and the moisture from the ground. Early in the morning, as soon as the bare ground between the rows is dry, the haymakers turn over the rows, the under side of which, and the ground on which they have laid, are completely wet from checked evaporation. This operation of turning is easily performed, and well repays the labour. When the ground is dry the tedding machine is set to work, and the turning and drying are repeated. When the weather is at all doubtful we resort to the lap or shake cock, in making which the haymaker gathers up an armful, say 8 to 10 lbs. of partly dried grass, and lets it fall lightly on a heap. He then thrusts his hands under the heap, lifts and folds it without pressing, and sets the heap quite lightly on the ground with the end towards the wind: in appearance it is not unlike a lady's muff of large size. It is a common saying, that well-made lap-cocks will stand a fortnight's rain free from damage. Without subscribing to this, I have no hesitation in stating, that in no form does partly-dried grass keep so well as in lap-cock. The rain falling on a lap-cock is thrown off in a somewhat similar manner as from an umbrella. I never recollect finding a well-made lap-cock thoroughly wetted.

By the mode I have described I accelerate the process of haymaking; and it is by no means uncommon for me to secure my crop in less than half the time required by my neighbours. On the hay becoming sufficiently dry, it is formed into wind-rows and then drawn together by a sweep into large pikes of about three loads each, with conical tops, which are slightly thatched with straw.* When the pikes have undergone a partial sweating, they are carted away and well intermixed in stacking. This pikeing before stacking I find quite necessary with my rich quick-grown grass to prevent over-heating. Early in the mornings, and at other intervals, when not occupied with haymaking, the men hoe and clean turnips, &c. Though this district is high and the climate rather wet, yet from 1847 up to the present time I have succeeded in carrying the whole of each crop in good condition.

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* Thatching the pikes is unnecessary, except in a district where more than an average fall of rain occurs.—EDIT.

In stating the produce per acre I give the ascertained weight of a great portion of the first crop, and the whole of the second crop, as weighed out of the pikes. The price of 6d. per stone, or £4 per ton, is lower than the average value for a series of years in this district :—

Average weight of first crop, gathered in June, 1856	2½ tons	
Second, or aftermath, gathered first week in September, 1856...........	1½ ,,	
	4 tons=	£16 0 0
Pasturage from March to April, and in October and November		1 5 0
Gross produce of one acre of grass land		£17 5 0

Estimating 1 ton of hay as equal to 6 tons of Swedish turnips, this produce of natural grass does not compare unfavourably with a root crop. One ton of well-gotten hay is, however, superior to 6 tons of swedes, on account of its greater quantity of oil, which is without doubt one of the most valuable elements of food.

The meadows on which this produce is grown are on strong clay, which before draining yielded but a scanty herbage, interspersed with rushes, and but a light crop of hay late in July.

The following is my treatment of my permanent pastures, which are heavily stocked during the summer season. The home pasture, of barely 15 acres, carries my 20 milk cows during the day. They are housed during the night. This clearing the pastures by night has in some degree the effect of a change of pasture, and prevents their lying so much on the grass they eat. In addition to the 20 milk cows, 20 ewes with their lambs graze and fatten on this home pasture of 15 acres. These ewes are supplied with ½lb. of rape-cake each per day. It will be observed that the dung from the cows is likewise enriched by the extra food given to the cows in stall. Several times during the season a labourer is sent round the pastures to spread about the dung : for this operation I prefer wet weather. My other pastures are also rich feeding pastures, and carry a beast and an ewe with her lambs per acre. During July and August the coarse tufts of grass in the pastures are mown and carried home for fodder for my horses. I prefer this pasture grass for horses to that from aftermath, which is too relaxing. These pasture mowings more than suffice fo the bulky food for four or five horses during July and August. The surplus is partly eaten by the cattle, the remainder being converted into hay, and mixed with cut straw for steaming. After this mowing of the tufts, the pastures assume the appearance of aftermath, and the animals graze with appetite over the whole. Late in autumn and early in spring the ewes are continued on these pastures, which they graze quite close. They are housed during severe weather, and at night on boarded floors, and turned on the pastures during the day through winter in fine weather.

To these frequent cuttings of my meadows, and close grazing of my pastures, I am in some degree indebted for the excellent quality of their produce.

My successful use of rape-cake as food has caused my attention to be given to the cultivation of the green rape plant for fodder, of which I produce two crops during the year. The sowing for one is made towards the close of June or early in July, after early potatoes, or on other vacant ground, enriched with the fresh excrement from my cattle. The produce from this sowing is cut towards the close of September, in October, and early in November. To ascertain the quantity, I measured out 400 square yards, which was cut in dry weather; the produce was upwards of 1¼ tons, being more than 16 tons per acre. This cutting was made before the crop had attained its full growth. The average over the whole would be more.

Towards the close of July or early in August I sow rape in a seed-bed, for which I use the headlands of crops which are horse-hoed. These plants are taken from the seed-bed and planted after lifting the potatoes in September or October, and produce a crop during the early part of May. Though the operation of planting out is somewhat tedious, yet the produce being available at a time when green food is scarce, I find its cultivation remunerative. My produce this season is equal to about 7 to 8 tons per acre. This spring crop is cut in time to be followed by cabbage and kohl-rabi.

The properties of green rape as food for sheep are well known. In Morton's Cyclopædia I find a complete analysis, showing it to be rich in flesh and fat-forming constituents. Dr. Voelcker characterises it as richer in fatty matter than any other green crop used for food. During the month of October and early in November I give it both to my milk and fattening cows : they devour it with relish. I have as yet found no green crop equal to green rape at that season of the year.

In cultivating the cabbage and kohl-rabi, I find it advantageous to plant them in rows of 4 ft. to 4 ft. 6 in. apart, with potatoes between each row. As the potato forms its tubers and expands its foliage, whilst that of cabbage and kohl-rabi are comparatively small, I obtain an abundant crop of each. On the potatoes being lifted, the cabbages nearly cover the whole ground.

The produce of the cabbages exceeds that of any other vegetable I cultivate : yet on account of its flavour I limit its use to a less quantity than that of any other green food. The kohl-rabi, though not equally productive with the cabbage, is in flavour somewhat more agreeable.

Rotation of crops.—The extent of land in tillage in my occupation being limited, my rotation is short, and consists of—

1st. Mangel or turnips, which are amply manured with fresh excrement from my cattle. I prefer ploughing this into the ground in all its freshness ; but as this is not always practicable in the autumn, when used in spring I mix with it guano, at the rate of 2 to 3 cwt. per acre, for the purpose of accelerating its decomposition. With the view of satisfying myself of the effect of this, I mixed a small quantity of guano in a garden-pot filled with fresh excrement; the effect was soon perceivable from a strong effluvium and an appearance of gaseous bubbles, and a change to yellowness of colour, whilst a pot of excrement without guano in juxtaposition remained comparatively unchanged. This experiment was repeated in my vinery, at a temperature of 56 degrees, with a like result. Before I resorted to this I observed a comparative slowness of growth of the root crop after the application of the fresh excrement, which I do not now perceive.

My mangel and turnip crops average, from actual weighings, about 25 tons to the acre; that of mangel being somewhat the heavier.

The estimate of the value of either of these crops is usually made on what it leaves for profit, and reckoned at 8s. to 10s. per ton. This is a very unsafe rule: if taken on its quantum of nutritive matter, it assumes a different value; as dry material, you cannot obtain any concentrated food equally nutritive at less than £7 to £8 per ton, which would give 16s. to 20s. per ton as their value in the natural state.

The great proportion of water contained in these roots would, however, prove a serious drawback to their extended cultivation for sale at a distance. You can convey in hay six times, and in oil-cake or beans twelve times, the quantity of nutritive matter contained in turnips. A consideration of this has often reminded me of the great additional labour incurred by those who give turnips wholly as food to the amount of 170 lbs. to 180 lbs. per day. A feeder who maintains 100 head of cattle will be conveying at the rate of 23 to 25 tons weekly of superfluous water from his field, of which the effect will be to increase the bulk of his manure without adding to its value. Some small advantage is derived from the watery property of the turnip, particularly when stored, in consequence of its supplying beverage in a less chilling state than by cold water alone, from drinking freely of which in severe weather I have seen cattle seriously chilled.

My crop in succession to mangel or turnips is that of beans, which I prize highly for my purpose, affording as it does a large amount of the nitrogenous element. I have hitherto cultivated the common kinds of field-beans. On the recommendation of an acquaintance, who stated that I might reckon on a much larger produce from the long-pod or garden bean, in 1856 I set out amongst a crop of field beans an interval of 1,670 yards for trial of the sword variety of long-pod beans. The produce was carefully weighed, and found to be of—

Field beans, white blossom, 52 bushels of 63lbs. at 5s.	£13	0	0
Straw, fully 2 tons per acre	4	0	0
	£17	0	0
Long-pods, on 1,670 yards 1,435 lbs.=66 bushels perof 63lbs. per acre	£16	10	0
Straw, 1¾ tons per acre	3	10	0
	£20	0	0

The garden or long-pod beans having ripened a fortnight before the field beans, and having been left standing till the same time, had lost almost all their leaves. Their appearance, however, denoted a less weight of straw even if cut sooner than the field bean. The price of bean straw, £2 per ton, is low in proportion to its value in the analysis given in vol. xvii., page 263 of this Journal.

A sample of long-pod beans gave the following composition on analysis by Professor Way:

Moisture	12·50
Woody fibre	4·35
Albuminous matter	28·25
Oil and fatty matter	4·05
Starch, gum, sugar	46·95
Ash	3·90
	100·00

On referring to the various analyses to which I have access, I find the comparison favourable to the long-pod, which has less of woody fibre in proportion of 4·35 to 10·20, with more of starch in proportion of 46·95 to 42, and more of oil in proportion of 4·05 to 2 per cent. than the common or field-bean. The cultivation of the long-pod is precisely similar to that of the common kinds. The seed is strewed in drills or otherwise dibbled in rows 2 feet apart. The horse-hoe is applied several times between the rows, and every weed pulled up.

With the view of comparison I give the proceeds of my wheat crop of 1856. This is the third in my rotation, after which I again cultivate turnips or other green crops:

	£	s.	d.
Average 5 qrs. (63lbs. per bushel) of wheat of good quality, at 62s.	15	10	0
Inferior wheat	0	12	6
	16	2	6
Straw, 38 cwt. per acre, 35s. per ton	1	13	9
	£17	16	3

I state the price I pay for straw for fodder; every cwt. contains about 40lbs. of starchy matter available for respiration, which I obtain, together with a small per-centage of albumen, for 1s. 9d. per cwt., or 35s. per ton.

Treatment of Milk-fever.—Those of my milk cows which I retain for some time on hand are invariably in high condition, and on this account more liable to milk-fever. I think it pertinent to explain the method I use to prevent this malady. It is now six or seven years since I lost a cow from milk-fever. On conversing on the subject with a gentleman who had been on a visit to Mr. Fenton, who kept a considerable number of dairy cows near Rochdale, he described to me the means used by that gentleman, which, with probably some modifications of my own, I have since continued to apply. No difference is observed in the cow's treatment or food till the symptoms of calving appear. Her supply of water is then limited to about one-half of what she would drink. When she has calved, and for two days afterwards, she is plentifully supplied with a quantity of oatmeal gruel twice per day, with about 2lbs. of treacle each time in the gruel. No water is given separately; she is allowed her ordinary food. After calving she is milked every 3 to 4 hours for two days or upwards. The attendant is enjoined not to strip her milk clean, but leave a little in her udder, in the manner he would use in drying a cow of her milk. When two to three days are over, she is supplied with water and food *ad libitum*, and the ordinary process of milking clean twice per day resorted to.

The only instance of milk-fever since I adopted these precautionary means occurred in 1855, under the following circumstances. I bought a cow in July to calve in September; her appearance denoted good milking properties. She dropped her calf whilst out on pasture, and without giving the previous notice by filling the udder, or showing symptoms of giving much milk. I then told her attendant he need not use the precaution, but supply her with food and drink to promote her secretion of milk. Within two days of her having calved, the feeder came to me with the intelligence that she had dropped. On arriving at her stall, I found her case a decided and severe one. Having collected a sufficient number of assistants, together with our village druggist, Mr. Holden, who on occasions of emergency was called in to assist, and on this occasion was the chief adviser, we resorted to the appliance of bags filled with the hot steamed food, of which there was a plentiful supply in readiness. These were placed along her spine and sides, and on cooling replaced with others; this operation was continued from noon till evening. During the same time men were continually engaged (relieving each other) in squeezing from her teats what little milk they could. The bags of hot steamed food had the effect of inducing a profuse perspiration. A dose or two of sulphate of magnesia were given, then linseed-oil, but without effect; after this treacle with brandy in half-pint doses, to the extent of 10 to 12lbs. She was several times pierced with the trocar to relieve her from gas by which she was distended. Aperient medicine was also given. The symptoms of the malady began to abate in the evening. Early next morning she was still lying, her pulse quite feeble, and other appearances of languor. On being supplied with a wine-glass full of brandy in some warm gruel, she raised herself on her feet, and recovered.

Pleuro-pneumonia.—During the year 1856 pleuro-pneumonia prevailed to some extent in the neighbourhood, more especially amongst the dairy cows about Leeds. Its first appearance in my immediate vicinity was in the herd of my next neighbour, who lost several, and sent others off immediately for slaughter—in all 16 to 18. Towards the close of July, and during the hot weather of August, my own herd of cattle, more especially my milk cows, were also attacked. I sent some few off which were in a forward state of fatness; the return for these being small in proportion to their value for milking, together with the unpleasant idea of sending off animals at all ailing for slaughter, influenced me to use every means for their restoration, and to give their treatment my best attention. At first my treatment underwent various modifications, and I lost two cows. Without describing the change, I proceed to supply particulars of the treatment I afterwards adopted, and which I have since continued with little alteration.

My feeders are strictly enjoined without loss of time to report to me any appearance of ailment, a practice I strenuously recommend to any one who concerns himself about the treatment of his cattle when sick, more particularly as regards the disease of which I am speaking, the chance of success in which depends essentially on early application.

The first appearance which arrests the feeder's attention is loss or partial loss of appetite. If on examination I detect any of the symptoms which characterize pleuro, viz., cough, quickness or deepness of respiration, loss of cud, and acceleration of pulse, intermittent warmth and chillness of horns and feet, I proceed at once to bleed till the pulse is sensibly affected: this requires usually 5 or 6 quarts to be taken. I then give—

Epsom salts	8 oz.
Sweet spirits of nitre ..	1 oz.
Tartar emetic	½ drachm.
Digitalis..	½ drachm.
Flour of sulphur ..	4 to 6 oz.
Treacle	16 oz.
Cocoa olein	6 oz.

These ingredients are mixed and given in plenty of warm gruel, for which I use my pig food, boiled Indian-meal with one-fourth proportion of pea-meal. On a renewal of the difficulty of breathing or acceleration of pulse, I repeat the bleeding to a less degree, say 3 quarts, and give likewise the tartar emetic and digitalis in the gruel.

I continue to give, morning and evening, in gruel—

Sweet spirits of nitre..	½ oz. to 1 oz.
Flour of sulphur ..	4 oz.
Treacle or sugar ..	8 oz.
Cocoa olein	4 to 6 oz.

At noon I give gruel, with addition of a little sugar only. The doses of treacle and sulphur are modified so as to keep the bowels moderately open. It will be observed that I give Epsom salts as the first dose, on account of their quick action, but afterwards I prefer treacle with sulphur. The patient requires watching with the greatest care. The sick room ought to be well ventilated at the top, but kept warm day and night; a depression of temperature or a draught has been observed to disturb the breathing. When the feverish symptoms have abated I give oatmeal instead of Indian-meal in the gruel. I continue the cocoa olein in the gruel throughout, with doses of ½ oz. to 1 oz. sweet nitre, and 3 to 4 oz. of flour of sulphur. In several cases, when the pulse has become feeble, and below 60 beats per minute, accompanied by weakness and languor, I have given a wine-glass full of brandy in the morning's and evening's gruel with apparent advantage. The attendant is instructed to offer the animal change of food—brewer's grains, bran-mash, a little hay, grass, green rape plant, or other palatable material. It is encouraging to find the animal begin to eat and make its selection of food.

Since I used the precise treatment I have described, upwards of twenty in succession have recovered. In this number I include those belonging to my neighbours who have used the same means under my advice and direction.

The time the cattle have been unwell has ordinarily varied from 14 to 21 days; some have exceeded this. The healthy action of the skin is stimulated; the animals continue to lick themselves with little intermission throughout; they likewise retain or otherwise resume their cud, under conditions I should not have expected; frequently when supplied only with the gruel and its ingredients, with not more than a pound or two of hay per day, I have observed them cudding.

They have lost in live weight 1¼ cwt. to 1¾ cwt. A considerable portion of this will doubtless be in bulk from the use of the purgative medicines. The milk cows, whilst suffering, have reduced their yield of milk from 2 to 4 quarts per day; but on recovery have almost wholly regained their former quantity. In no instance have I found a greater diminution than what might have been expected from the loss of condition and of time.

The cocoa olein is prepared in Messrs. Price and Co.'s candle manufactory expressly for cattle, being lower in price than what is used by medical practitioners.

In a conversation with Mr. Garnett, of Clitheroe, I learnt that some time ago he purchased eight or ten polled Galloways from a lot of 50 which were exposed in a market for sale. Nine weeks after this they became affected with pleuro-neumonia, from which he lost the greater part of them. He afterwards learnt from the dealer from whom he bought them that the remainder of the herd of 50, which were sold to six or eight parties who resided at a distance from each other, were also affected with the disease in the same week and with the like result.

From this, to which numerous instances similar in character may be added, we may infer that the origin of the disease is somewhat remote. The 50 Galloways, being nearly the same age, would have been purchased from various breeders, and sent together from Galloway to Clitheroe, a distance of 150 miles. It seems not improbable that, from exposure to a sudden change of temperature, to which they were subjected after they had been collected together by the dealer, the process of respiration has been impeded, by which some impurity of the blood is engendered, which slowly and imperceptibly increases, until the symptoms I have described attract attention.

Cattle from Ireland are more subject to this complaint than others. They are brought on board vessels, crowded together in the hulls or on the decks; and, on reaching land, travel usually on foot considerable distances to markets, for sale.

My milch cows are housed during winter in stalls of more than ordinary warmth; and are turned out to grass in the month of May, which, in the season 1856, was unusually wet and changeable. The pleuro has prevailed among them since July. At the commencement of this illness, the feeder states that, up to the meal before the cow has eaten up her food, given her usual yield of milk, and shown every symptom of health. Thus, though the disease has hitherto been imperceptible, and of slow progress, it arrives at a stage to cause a sudden interruption of the functions: the cow's appetite is gone, and her yield of milk diminished to one-half of what she gave 12 hours before.

On applying the ear to the side of the animal, you distinctly hear the air rushing past, but, at the very early stage, as far as the ear can detect, with little or no impediment. The inhalations become frequent and laboured. On opening the vein, if you place your finger in the stream of blood, a hot sensation is imparted. If you again place your finger in the stream, towards the close of bleeding, the heat is sensibly diminished: the colour of the blood also undergoes a perceptible change from a dark to a redder or brighter colour.

A consideration of these symptoms seems to denote a greater consumption of carbon, for the combustion or oxidation of which, it seems probable that the animal is prompted to exert her organs of respiration for the supply of the necessary air, whilst the blood, at the same time, is in an impure state. At this stage, immediate relief seems requisite, to prevent or arrest damage from over-exertion. With this object, I resort to bleeding, as the speediest means of subduing the fever and lowering the circulation. Tartar emetic and digitalis are known also to have the effect of retarding the circulation and lowering the pulse. It will be observed that I apply these, necessarily, in the very early stages. Spirits of nitre and flour of sulphur, which are continued much longer, stimulate the secretions, and thus tend to purify the blood and the system. My observations lead me to think that the organs of respiration are, on the first appearances, comparatively speaking, but slightly injured. It is not until after a lapse of time that, with the ear, we can perceive that dulness of sound which betokens injury. In the two which died, we could distinctly trace the increase of this, until the flow of air on the one side seemed entirely to have ceased, whilst on the other we could plainly hear the air passing to and fro. On a *post mortem* examination, we found the lung on one side completely damaged, whilst on the other it was but little affected. Whilst the greater heat of blood, and the more frequent respiration, denote an excessive demand on the carbon, yet, at the same time, the animal is devoid of appetite. The necessary consequence is, a consumption of the components of the system. The fats will first be laid hold of; then, though probably not altogether singly and separately, the carbonaceous components of the fibrine: but, as these materials are in succession less easily available, their consumption seems necessarily to imply a greater exertion of the organs of respiration.

These considerations have led me to resort to a supply of food rich in elements of heat, carbon, and hydrogen, in a form easily available for respiration. Indian meal is particularly rich in starch: by the process of boiling, it approximates more nearly to sugar. Together with this, I give sugar and treacle in appreciable quantities, and also oleine oil. These ingredients are mixed, and given in warm water. Starch, sugar, gum, dextrin, &c., are accounted the main supporters of the heat of animals, when in health: they contain, with carbon and hydrogen, a considerable proportion of oxygen. On this account, they require less of the oxygen of the air to effect their combustion. Their components are:

	Carbon.	Hydrogen.	Oxygen.
Starch	44·45	6·17	49·38
Sugar	40·00	6·66	53·54

The composition of oils differs very considerably from that of starch and sugar, oils being much richer in carbon and hydrogen, with less of oxygen. They contain, on an average of analysis:

	Carbon.	Hydrogen.	Oxygen.
Oil or fat	78·13	11·74	10·13

The following are ultimate analyses, by Dr. Dugald Campbell, given in Dr. Thompson's "Lectures" (p. 34):

	Carbon.	Hydrogen.	Oxygen.	Nitrogen.
Cod-liver oil	80·18	13·72	5.854	·246
Olive oil	69·38	13·47	17·092	·058

A proximate analysis, by M. Braconnot, of olive oil—one of the vegetable oils richest in olein—gives:

Of Olein.	Margarine.
72	28

Vegetable oils or fats are observed to be much longer in undergoing digestion, and in their passage through the system, than the other elements of food. They contain, in the same space, the greatest proportion of elements necessary for the support of vitality, according to Lehmann, whose works I have recently been able to obtain—the first and second volumes in German, the third in English. I find in vol. iii., p. 358, the following computation: "If, in a given time, the organism absorbs 100 grammes of oxygen, the following quantities would be necessary, in union with 100 grammes of oxygen, to satisfy the requirements of vitality: Of fat, 34·23 grammes; starch, 84·37 grammes; sugar, 93·75. From which it will be seen that a pound of fat or oil, in combination with the oxygen supplied by the air, is equal to nearly 3lbs. of starch or sugar."

Lehmann (vol. iii., pp. 336 to 339) gives a series of interesting experiments by Vierordt, who found the mean, or his average respirations whilst in a state of rest, to be 12 per minute, by which he expired 366 cubic inches of air, containing 13·5 cubic inches of carbonic acid. By increasing his respirations to 96 per minute, he expired 2,928 cubic inches, containing 79 cubic inches of carbonic acid. From this we learn that the organs of respiration, are endowed with a capability far beyond the normal requirements; the volume of air being increased eight-fold, that of carbonic acid nearly six-fold. Had Vierordt been able to continue these laboured respirations without damage to his organs, he must necessarily have consumed more food, for the increase of carbonic acid, or, otherwise, have expended his own substance.

At page 381, vol. iii., Lehmann recites experiments, carefully conducted by Hanover, on patients suffering from pulmonary disease, which show that the absolute amount of carbonic acid increases with the number of respirations, whilst the relative amount (that which is contained in a given volume of air) diminishes. These experiments tend to confirm in a remarkable manner my suspicions as to a greater consumption of carbon during this disease. They show also that the organs of respiration, though weakened, inhale a greater quantity of air, and exhale also an increased quantity, though less in proportion, of carbonic acid. From the diminished proportion of the carbonic acid to the volume of air, in the increased respirations, it is clear that the system could not afford an adequate supply of carbon.

When in London, I sought an interview with Dr. Theophilus Thompson, F.R.S., with the object of learning his views on the efficacy of oil as medicine, of which he has had great experience, and which, I am informed, he first introduced into the London hospitals. In the course of conversation, he drew my attention to several cases, in which his patients had gained more by the use of cod-liver oil than the weight of the oil supplied. I ventured to suggest that this might possibly be attributed to the food being deficient in elements which are found concentrated in oil; in support of which, I explained that, in my treatment of dairy cows, I have completely satisfied myself that, by adding to ordinary food beans or other materials peculiarly rich in albumen, but comparatively deficient in oil, I enrich the milk, not only in curd, but also in butter, to a far greater extent than is contained in the oil of such additional food.

Lehmann (Leipsic, second edition, p. 271) states: "On theoretic grounds, I have long been satisfied that fats belong to the most active agents in the metamorphosis of animal materials (of digestion); and, by numerous experiments and observations, I have completely assured myself of this" *(that what had been matter of subjective, had, by experiment, become matter of objective, certainty).*

These experiments he explains, and cites others by Elsässer, which show that the digestion is materially assisted by an admixture of fat. I learned from Dr. Thompson that cod-liver oil is composed almost wholly of carbon and hydrogen, with a smaller per-centage of oxygen than other fats. I did not ascertain from him, nor do I find in his "Lecture to the Medical Society" (a copy of which he kindly presented to me) the relative proportion of oleine and margarine fats. In Royle's "Materia Medica," there is a proximate analysis of this oil by Dr. de Jongh, which gives:

Of oleic acid	74·
Margaric acid	11·75
Glycerine..	10·17
Butyric and acetic acid.. ..	·11
Other substances..	3·97
	100·

This analysis shows a far greater per-centage of oleine, compared with margarine, than any other fat I have seen noticed.

That the nutritive effects of materials for food depend much on their proximate elements, I need only adduce the composition of the grain and straw of wheat, which are very similar in their proportion of ultimate elements, whilst the predominating proximate principle of the grain is starch (73 per cent.), that of straw woody fibre, of which it contains 61 per cent., with only 36 of starch. That oleine is more easy of consumption (more available for respiration), I refer to Lehmann, vol. i., p. 121, where he states that the fat of animals being found to contain a greater proportion in comparison with the fat of plants, may probably be attributable to the oleine being more easy of consumption.

My attention was drawn to some experiments of Dr. Leared —published in the *Medical Times*—from which it appeared that the oleine of cod-liver oil agreed better with several of his patients than the oil in its natural state, from which he drew the inference that the effect of margarine was excrementitious; this can only apply to patients whose organs are weakened. My observations on feeding tend to the conclusion that if you afford animals an adequate supply of sugar, starch, and olein fats for their respiratory and other functions, the margarine of the food will be converted into and stored up in animal fat to the extent which the system is capable of absorbing. I am, however, clearly of opinion that on a deficiency of food or incapacity of the organs from disease or other causes to supply the wants of respiration, the stores of solid or margarine fat are laid hold of and consumed. In the spring of 1853 I sold some fatted cattle to Mr. Freeman, of Otley, with whom I had frequently dealt; he reported that they did not contain the quantity of loose fat which he had been led to expect from their touch and his experience of my feeding. Having told him that they had recently suffered from soreness of mouth, by which with evident symptoms of appetite they were hindered from eating the necessary quantity, Mr. Freeman remarked that he well knew from experience that cattle which had recently suffered from this (known here as the mouth-and-foot-sore complaint), were deficient in loose fat. I may also here state, as a matter of some physiological interest, that cattle which have been partially damaged in the lung from previous attack of pleuro or other causes are invariably found deficient in their store of loose fat.

It will be observed that cod-liver oil contains in the same space the greatest proportion of elements which, in combination with the oxygen of the air, are necessary for the support of vitality, and with this by far the greatest proportion of olein in comparison with other oils in their natural state; and it seems worthy of remark that this oil is held in the greatest esteem for pulmonary complaints; next to this, and almost in equal repute, is pure olein.

From what has been premised, it will be found that from consideration of the symptoms of pleuro-pneumonia I was led to suppose an abnormal consumption of the elements which support respiration. I have sought to meet this by a supply of food particularly rich in such elements, and in a form most available for their purpose. My observations on the effects tend to confirm my opinion that by this means I supply in food what would otherwise be abstracted from the system with greater labour to the organ and with impoverishment, thereby weakening the ability to resist disease. I am therefore encouraged to offer it for the consideration of those who give their attention to pathological chemistry.

If any owners of cattle should adopt my treatment, I urge the most scrupulous attention to the treatment here prescribed for the sick animal. I am clearly of opinion that one of the animals which died might, by a greater observance of this, have been restored.

In the course of the foregoing observations, I have made frequent allusion to Lehmann's "Physiological Chemistry." About a year since I obtained this work on loan for a short time from a member of the Pharmaceutical Society. A perusal of such portions as seemed likely to afford me the particular information I was then in quest of, disclosed to me the pen of an author, master of his subject, and of great research and acquirements. With some difficulty, and through the kind assistance of others, I have recently obtained the whole work, three volumes, the first and second in German, the third in English. I learn that in both languages it is out of print. I cannot but hope that ere long another edition of a work, every page of which is replete with information of peculiar interest, will be published.

Burley Hall.

THE AUTUMN MEETINGS OF 1857.

Our agricultural meetings are day by day becoming more practical in their character. They nearly all show more work and less talk. It is not so many years since, when as a rule the reverse of this was the case. When these autumnal gatherings were but the stalking-horse behind which the orator might "shoot his wit." When the practice of agriculture itself was but little considered, and the great effect of the occasion was made to depend upon an after-dinner speech. We have gradually got out of this. Our shows of stock are better, and our speeches are shorter. The meeting of a local agricultural society is now nearly always that it professes to be—encouraging and developing the efforts of the farmer, and bringing him and his landlord to a better appreciation of each other. The direct tendency of such assemblages is not merely the production of good short-horns, or the education of good ploughmen. So surely as the value of the labourer is known by the place he occupies here, as certainly may we arrive at the worth of his patron or employer. There may not, perhaps, be actually any series of premiums for the best landlords, but they still come to be so tried one against another; not so much by the amount of their subscriptions or their presents of venison, as by the real interest and share they take in what is going on.

It is only fair to say that never did the landowners of England do their duty so well in this way as they are doing it now. There are very few of these local anniversaries but can count upon their best support. When they take care not only to be present, but evince something far more than a passing or affected inclination to the business of the day. Indeed, some people are beginning to cry out that the gentlemen take too many of the prizes. At the worst, however, this is a fault all in the right direction. Next to setting his tenant going on liberal terms, the landed proprietor can hardly do anything better than by introducing the best stock and machinery into his neighbourhood. And he is doing it. In many a district where even yet the tenant-farmer lacks the means or the heart to launch out, he finds an example in, and an opportunity from his landlord. The new drill, the steam-thrashing machine, or the bull with the best pedigree, may be all had for the asking at the house farm.

Such, at this present writing, are the chief characteristics of our autumnal meetings. The higher order of agriculturists and the country gentlemen are keeping themselves well alive to the improvements of the day. They are doing this, however, in no mean or selfish spirit. There is, in fact, no other pursuit so utterly free from the fear of opposition interests, or so happily devoid of petty jealousies. The manufacturer, in his general invitations to parties to inspect his works, often enough will stipulate that no brother-manufacturer shall be included in the company. The farmer, on the contrary, who thinks he has something worth showing, is only too happy to show it to his fellows. If they will not come to see him, he will send out the best he has, for their inspection and approval. This is hourly becoming more a habit amongst us—open house, and a readier disposition to enter at the agricultural meetings of the district. It has so come to pass that these anniversaries are better supported, and more in character with what they were intended to be, than we ever yet remember them.

In only one particular is there this year any perceptible falling off, and this is in the speech-making. As far as agriculture itself is concerned, there would seem to be rather the want of some object of interest. Agricultural statistics have somewhat lost their zest. The condition of the labourer—our systems of tenure—and even the education of the farmer, a theme of some increasing importance—have not so far come in for much consideration. With the county member the engrossing topic has naturally enough been one which engrosses with him the attention of the whole nation. At one of the earliest of these gatherings, that at Thame, in Oxfordshire, Mr. Henley made one of the most manly of all the addresses we have yet heard or read on the state of our affairs in India. It had that sanguine feeling which we believe every Englishman has, as to the ultimate result, at the same time that it was sufficiently serious and emphatic in impressing what would be required of us. Mr. Henley has been followed, in turn, by Sir Bulwer Lytton, at St. Alban's; Mr. Disraeli, at Newport Pagnell; Lord Curzon, at Nuneaton; Mr. Hastings Russell, at Leighton Buzzard; Sir John Pakington, and, in short, by almost every gentleman of any position who has been called up on these occasions. It is gratifying to know that with one marked exception or so, the tone of these addresses has been very similar, and that a Minister could not but thank the country gentlemen for what they have said, and the sympathy they have evinced, at so trying a moment. As with Mr. Henley at the outset, all party spirit or bias has been happily put aside, and the country encouraged to look with that heart and confidence to the issue, it would of itself rely on wherever Englishmen are engaged.

We have said that the conduct of the landlords, in supporting these gatherings by their presence and active participation in the proceedings, is generally worthy of all praise. But there is unfortunately no rule without an exception, and there would seem to be rather a remarkable one in this instance. One of the very best of all the country meetings was that held about the beginning of last month at Stockton. It was the anniversary of the Durham Society, and the show of short-horns and horses was something extraordinary; Mr. Booth, Mr. Fawkes, and Colonel Towneley, amongst others, sending their best animals. After the show of course came the dinner, and it is thus *The County Advertiser* talks of it. The Editor is speaking of "the patronage of the great landed proprietors and gentry of the county of Durham to their County Agricultural Society," and he goes on in this wise:—"They have contributed liberally to its funds. Their names are on its subscription lists. They are understood to approve, and to 'wish well,' &c.; but as for attending its meetings—taking any personal interest in its actual well-doing—showing any personal respect for its conductors—that is quite another matter; that they will not, and do not. Their money is given—their countenance, their personal influence is utterly withheld. Whoever else may think proper to dine and chat with farmer Hodge and farmer Hobnail, they will not. Our readers will hardly consider us as advancing this on light grounds, when we state that, at the recent agricultural dinner in Stockton, with the exception of the chairman, Mr. Spearman (long, zealously, and consistently, the friend of the society), scarcely a member of the class to which we refer was present. Farm-tenants of great respectability were there in goodly numbers—taking the proper interest—giving the proper attention; but of the rural gentry—the county landed proprietors—we repeat—the chairman was almost the sole representative. How, and why, is this? Are the interests of agriculture of no vital importance to agricultural proprietors? Is it enough for them, and for all the purposes of their aid and countenance, to contribute an annual guinea, and say, "God speed the plough"? Hitherto, for some reason, it has not pleased God that the plough should speed so well in Durham as in the adjacent counties; it has not pleased him that, with the exception of one class of cattle breeding, our agriculture should take other than a comparatively low standing. Will the landed proprietors elevate it—will they improve matters—by shirking the only possible instrument of improvement, the only possible stimulus to improvement? We fancy not. It has been said, in a light way, that 'the world goes ill with Englishmen when they will not meet even to dine together.' We may say, with perfect seriousness, that things go ill with the agricultural world when its natural heads and chiefs will not meet even to dine together once in twelve months—will not give their personal and social countenance to what is intimately connected with their own personal fortunes and social standing. Some of these gentlemen are connected, probably, with other great county interests, mining and maritime. Are they equally shy of attending meetings relative to their advance? Do they give the cold shoulder to great coal proprietary dinners? or drop civil declining notes of 'extreme regret, &c.,' to the secretaries of great ship-owners' associations?"

This is hard hitting; and we give it here as a warning to all in or out of Durham. We live in an age when we want something more than "your blessing and a five-pound note." Is it not significant, too, that one of the worst-farmed counties in England has the most indifferent lot of landlords? Truly they are reaping their reward.

BEDFORDSHIRE AGRICULTURAL SOCIETY.

MEETING AT LEIGHTON BUZZARD.

"Although Bedfordshire must be classed as a second or even third-rate county in territorial extent and the natural fertility of much of its soil, yet in the progress of its agriculture, in the improvement of its stock, and, it may be added, in the social order, public spirit, and intelligence of its yeomen, it occupies an honourable and prominent position among the counties of England."

It is thus that Mr. William Bennett opens his essay on the farming of his native county; and in his very words may we, appropriately enough, introduce the meeting held at Leighton on the first Friday in October. We may even borrow a little further from him. During the time of John, brother and successor to Francis, Duke of Bedford, "the county agricultural society was first formed; and it is but justice to say that it has ever since been supported by the house of Russell with the most liberal donations. It is also gratifying to find that within the last few years, the society, since it commenced its perambulatory meetings, has become more healthy and vigorous. .... These societies have been of incalculable benefit to the community in general, but not to any county more than to Bedfordshire."

This Bedfordshire Agricultural Society is so announced to us with something of a flourish. We may think, perhaps, to see here something beyond the mere run of such local gatherings. We have, indeed, many reasons beyond Mr. Bennett's good word for expecting as much. "The Bedfordshire men" have been making themselves famous for some time past in the world agricultural. You find them prominent on all great occasions. They sit at the council board of our national organ. They are judges, exhibitors, and prize-takers at our national meetings. They are now acknowledged to have some of the best stock and implements in the world. Take for instance such men as Mr. Pawlett for the one, or the Messrs. Howard for the other. They muster in more than average force at the discussions of their London Club, and seldom speak but to the purpose, and with effect. In short, the agriculturists of Bedfordshire hold their own so well elsewhere, as to warrant us in anticipating that we shall see them doing pretty well, when at home.

The meeting at Leighton comes in all confirmation of this. It puts the further stamp of approval on Mr. Bennett's essay, while it assures us the county has not been distinguished without a cause. It is rarely that we have seen so excellent a district show. Either for good work or good stock, it was alike remarkable. *The* attraction, however, is admitted to be the prize ploughing. "Indeed it may be said that no county in England can now boast of better ploughs or of more skilful ploughmen." This, again, was brought to the proof on Friday. There was one special premium OPEN TO ALL ENGLAND—five-and-twenty pounds for the owner of the plough, and a watch for the ploughman — which brought eighteen entries. These came from Hertfordshire, Northamptonshire, Buckinghamshire, Essex, and elsewhere, to compete with the home workmen. They were coupled, according to their several tastes and experience, with ploughs made by Taylor, Bentall, Howard, Ransome, Fry, Adams, and Ball. The day was beautifully fine, the trial land in the best possible condition, and some of the ploughing declared never to have been excelled. It was still settled long before the Judges came on the ground to whom the prize must go; and in due course it was decreed accordingly. The owner of the prize plough, and who receives the twenty-five pounds for what we may venture to record as about the best piece of work of the year, is his Grace the Duke of Bedford. The ploughman is George Brown the younger, who was equally successful last year at Woburn; and the makers of the plough are the Messrs. Howard of Bedford. So that, after all, as perhaps the Committee very well knew, when they magnanimously opened their entry to all the world, the honours are kept at home. In another class for ploughmen, within the range of the Society's operations, another of his Grace's men was again successful—and with another of Howard's ploughs; while in the Champion Class, for men who had previously taken a first prize, Mr. Hensman, whose works are at Leighton, was the manufacturer, Mr. Cooley the owner, and George Thorn the holder of the prize plough. Of those not fortunate enough to reach the first place, about the best work was done with one of Mr. Bentall's ploughs. It commanded a great deal of attention from the members of the Society. Beyond even these, there was much more to be commended, generally of a character so signally good, that after the comparison arrived at in a few bouts, a less skilful man on the adjoining lands would stop his pair of horses, quite "satisfied" with what he had seen. In some instances the evenness with which the furrow was turned, and the mathematical precision with which it was carried out, were in their way a very perfect illustration of the art here so successfully studied. One might almost have supposed the farmers themselves would take a little more active interest in the business; but a premium for farmers' sons or pupils resulted in "no competition." There were many on the ground, however, who remember seeing their historian, William Bennett aforesaid, take his prize for ploughing at Bedford; and he had a pupil or two here, who would have done "a tidy piece of work," even with the eyes of All England upon them.

At this eventful era, when ploughing by another system is coming or is not coming so rapidly, it would have looked a little cowardly not to have afforded it a trial. Last year, at Woburn, Mr. Smith, of Woolston, sent his, and for this occasion one of Mr. Fowler's steam-ploughs was engaged. With the land, as we have said, in famous condition, it did its work better than ever we remember to have yet seen. Of course it would hardly bear comparison with the prize-ploughing in the same field. Still the furrow was nicely put, and by the look of the thing, at any rate, Mr. Fowler has so far the best of his opponents. The only mistake was an imposition charge of a shilling to see the implement at work. You saw the prize ploughing for nothing, or say for the shilling you paid to see the stock, and which should have included—as it otherwise did—all there was to see. Many of the farmers would not submit to this, while the labourers had to peep through hedges, or sneer at it in the road as something they knew nothing about. The very object of trying the steam-plough was consequently lost. As we take it, the aim is to familiarize people with its action and usefulness, instead of hawking it about as a raree-show speculation, like Wombwell's elephant, or the pig-faced lady. At Salisbury all the ploughing by steam was accessible at no charge whatever. Those who could pay were supposed to have it included in their admission to the yard, and those who could not had a lesson gratis. Mr. Smith at Woburn made no charge, and we really cannot understand why the committee should have sanctioned one here. We repeat, it was a mistake.

A stock show held on the farm premises of Mr. Lawford, one of the vice-presidents and best supporters of the Society, included cattle, sheep, pigs, and horses. The cattle were all shorthorns, numbering now, according to Mr. Bennett, ten to one to any other breed in the county. The entries were unusually good; in fact, in many cases strong enough for something more than a local meeting. The quality may in some measure be estimated by the names of the exhibiters: such as Mr. Barnett, of Stratton Park, who took the first and second prizes for two-year-old heifers with a very pretty pair; Mr. Robinson, of Clifton, who did the same in the next class for those not exceeding two years; and was also first with the yearling heifers, and first again with a very fine milch cow. Then Mr. Lawford, who is gradually getting up a valuable herd, bred the prize bull, now the property of Mr. Hayter, and himself reared and fattened the prize ox. Mr. Crawley of Stockwood, Mr. Crouch of Lidlington, Mr. Wythes of Ravesden, Mr. Brown of Marston, Mr. Underwood, Mr. Atterbury, the Duke of Bedford, and Lord de Grey were amongst the other competitors. As a show of short-horns it was by far the best ever seen in the county.

The sheep, though by no means so numerous, were nearly all good—the best perhaps some cross-breds shown by Mr. Charles Howard and Mr. Littledale. These cross-breds are, in fact, the newly-christened "Oxfordshire Downs," with plenty of wool, meat, and quality to recommend them. In truth, if such good-looking square sheep as these are to be taken as a fair sample, the sooner the Oxfordshire Downs get a standing of their own the better. Mr. George Hine and Mr. Bates were also successful exhibitors of cross-breds, and Messrs. Newman and Armstrong of Leicesters. The Down classes brought no entries, Mr. Thomas of Lidlington not being this year an exhibiter.

In pigs the Duke, the Rev. Mr. Thursby, Mr. Littledale, Mr. Whitworth, and Mr Lawford had the chief honours. An extra premium for the best lot of *six* fat pigs resulted in an extraordinary entry, Mr. Lawford winning with some capital Berkshires—three of which Mr. Whitmore, the member for Bridgnorth, is to further test in Shropshire next week.

A Lincolnshire cart-horse, now the property of Mr. Manning, of Elstow, deservedly took the premium for stallions. He is a clever, lively, and very powerful horse, that promises yet more to improve. Mr. George Higgins had as clearly the best hunter in a four-year-old Minotaur horse; and Mr. Paxton, of Potsgrove, a very useful cart-mare, with a still better foal. Indeed the young draught stock were very promising. Mr. Street, of Harrowden, showed a couple of two-year-olds, that were only first and second to each other; while in a large entry of fillies, Mr. Crawley and Lord St. John had the best of it. Our deduction here is that the agricultural horses of the county are fast improving. With the two-horse plough you want something smart and active.

This summary must serve as our prize list, and we must be as brief with our report of the dinner. As it happened, a longer one would scarcely be required. There was, in reality, very little talk about farming. Colonel Gilpin, the president, certainly introduced himself at the outset as—according to a friend of his—"understanding the theory of talking about practical farming better than any man in the county," but somehow or other this did not lead to much. To be sure, it was the most wonderful toast-list that ever was arranged—if, as we rather doubt, it ever had been arranged at all. They toasted everybody and everything, some twice over;—the Lord Lieutenant of the county; the Duke of the county; the Members of the county; the town and trade in every possible shape; the successful exhibitors; the unsuccessful exhibitors; the donors of the prizes, *twice over*; the judges; the labourers; the clergy; the secretaries, *twice over*; the committee; and a dozen or two more, that we really do not remember. The most direct reference to the cause was a compliment to Mr. Bennett and his Essay, started by Mr. Hastings Russell, and echoed by almost every succeeding speaker. Beyond this, Mr. Brandreth Gibbs, in returning thanks for the Royal Agricultural Society, held out a hope that "the last link" in perfecting the modern agriculture of Bedfordshire should be riveted by an early visit of that august body to the county town. This was taken up by Mr. Barnett and Colonel Higgins, the latter of whom seemed to think it was high time this call had been made.

It would be unfair to Colonel Gilpin not to add a word in thanks to him for the spirit and unflagging cheerfulness with which he disposed of an extraordinary deal of work. With some chairmen we know, prone to dwell a little more on the line, we might have been there till now. No man could have done better than the gallant colonel. The fault was not with him, but his "instructions." The toast-list wants a little more attention from the committee; and, entre nous, *all* the speaking need not be kept to the cross-table. With our limited knowledge of the county, we could have named half-a-dozen men who would have given a good practical speech on practical farming. Otherwise, the dinner went well enough. There was not a seat in the hall unoccupied; town and county, the gentry and their tenantry, all uniting to support a society, the welfare of which is more or less identified with their own.

RICKMANSWORTH AGRICULTURAL SOCIETY.

The members of this thriving little society held a right pleasant ninth anniversary on Friday, Oct. 2. They could not have been more fortunate in their choice of a day. In fact, it was so bright and warm that Mr. Wilson, who attended on behalf of *The Illustrated News* to make a sketch of the ploughing-match, was fain in despair to ask some of his agricultural friends to stand at his side, for the sake of throwing him and his sketch-book a little into shadow. The battle-field of the ploughshares was a clover ley, within two miles from Rickmansworth, and formed part of Mr. James White's Apple-tree Farm. Rather more than half an acre was marked off for each competitor, and soon after half-past eight the word was given, and nineteen ploughs were seen cleaving their way, and throwing up a four and-a-half-inch furrow. Mr. John White, of the Parsonage Farm, sent four teams, Mr. James White three, and Messrs. Wilde and Geary each two; while Messrs. Fellows, Bateman, Wilson, Currie, Barnes, Mann, Hayes, and Longman were also represented in the fray. Only one out of the nineteen had a unicorn team; and one of Mr. John White's teams, as well as an elegant six-year-old grey mare in a second, and Mr. Barnes's pair, who bore on their frontlets the brass-embossed names of "*Duke*," and "*Violet*" (though the lad confidentially assured us that the mare's real name was *Dinah*), were especially admired. Nearly all the ploughs were two-wheel ones, and made by Davis, of Hampstead, who would seem to be the Tubal-Cain of the district; but we also observed one of Howard's. A brace of them only had crushers, or as some phrase them "outriggers" attached, and one of their handlers boldly claimed for himself the invention of it.

The situation of the field was especially beautiful. To the right lay the seat of Mr. Longman, famed not only for its magnificent cedars, but its gorse covers, amongst which, but a few mornings before, that patriarchal huntsman, Jem Morgan, had pulled down a brace of cubs, with the Lonsdale hounds. In the deep green valley beneath, the eye rested on the pleasant residence of Mr. Heywood, embowered in the bosom of thick overhanging woods, scarcely yet fading off into their autumn brown. And still farther down the same valley, Loudwater, the seat of Mr. Herbert Ingram, M.P., just peeped forth, with the belfry of the paper-mills at its side, silently marking that "temple of industrious peace," whose products, bearing the mental impress of a Mackay, a Timbs, a Reach, and a Gilbert, have built up for their owner so enduring a name in the European annals of "the fourth estate."

As the morning wore on, and the green strips in each allotment grew rapidly narrower and narrower, the field began to assume a very lively appearance. Mr. Abraham, the rector of Rickmansworth, Mr. Fellows, sen., Mr. Herbert Fellows, that most enthusiastic of secretaries, with the committee, and many of the neighbouring gentry, with their wives and families, were on the ground; and as soon as their dinner was over, the labourers' wives and children sallied out, and joined the groups, looking forward with no little interest and speculation to the reading of the prize list. The work was keenly scrutinized; and when the white-haired Nestors of the plough were led, stick in hand, along the edge of the furrows, and appealed to, as living oracles of half a century, on the subject of the coming winners, they shook their heads dubiously, and said that it was all so good that keener and younger eyes than theirs would "be hard-set to decide." And so it proved, as the waggon which was to serve as the prize platform had been long wheeled into the field, and set in position, before the judges (who had been busy in the morning among turnips, mangel wurzels, and cottagers' vegetables) could make their minds up at all. Just when they seemed to have hit it, some fresh doubt was raised, and away they patiently trudged, under "the sun's perpendicular heat," across the furrows once more. At length, when the fiat was given, Mr. Ingram mounted the waggon with his friends, and after the prizes had been read out by the secretary, gave a short, telling address to the winners, and the labourers generally. Among other things, he remarked that he never cared very much to see prizes given for long service; in fact, that he liked to see the married servants become masters, instead of being in service year after year—and the unmarried girls leaving service as soon as they prudently could, and getting a husband and a house of their own. He also pointed out to the employers how much it behoved them, even for their own interests, to husband the powers of their labourers; and by building cottages for them nearer their farms, to save them those long weary journeys to and fro, which so fearfully sap their strength, and make them rheumatic and old in their prime. The speech was very warmly received by the crowd of upturned faces below, who sent forth many a hearty "Bravo" at the allusions to the cottages, showing how much they have felt and suffered with regard to this great question of social polity. No other speech was delivered there; and amid the creaking, but, alas! not inapt exhortation from an old fiddle, to "*Follow the lad with the white cockade,*" the company dispersed; and the labourers fell gallantly back on the beer-barrels, which were lazily resting in a regular gipsy encampment of carts behind, and pledged in bumpers the ploughing heroes of the day.

The committee and their friends, including Captain O'Connell, M.P. (son of the illustrious "Ould Dan"), and several other visitors from a distance, sat down, nearly fifty strong, to an admirable dinner, at the White Swan, Rickmansworth, under the presidency of Mr. Ingram. In the course of the evening (which was not a little enlivened by Mr. Broadwater's songs), the chairman, with his wonted generosity, announced his intention of next year placing a silver cup at the disposal of the committee, to be competed for by tenant-farmers, upon terms to be settled hereafter; and from what transpired, coupled with the flourishing state of the funds, it seems not improbable that the next meeting will be on a much more extensive scale, and will include an exhibition of stock. The latter point was very strongly urged by the gentleman who responded to the toast of "The Judges." A more firmly-knit or better managed society is not to be found, and it only needs right strenuous co-operation on the part of the tenant-farmers, to give it a high place among its compeers. That support will, however, we are convinced, not be lacking, and we shall look forward with no small interest to "see what we shall see" at its next festival.

PRESENTATION OF THE MECHI TESTIMONIAL.

The union of Agriculture, Manufactures, and Commerce is at length properly cemented. In the last few weeks of his stewardship we are called together to honour one of the Sheriffs of London for what he has done. In becoming deference to the fashion of the times we present him with a testimonial. There might be various reasons for offering this. It might be given, as it has been to many a man before now, in appreciation of the spirit and determination he has displayed in making his own fortune. Or, it might have come here with especial grace, as some thanks for unbounded hospitality and hearty good fellowship. Or, again, with equal fitness, the tribute could have been made to stand as some acknowledgment for the manner in which the worthy citizen has fulfilled the duties of his position. We could dwell upon the zeal and activity he has shown during a more than usually active year of office—the smartness of his liveries—the style of his equipage—the excellence of his dinners, and many other such important items in the constitution of a Sheriff of the good City of London. But we do nothing of the kind. We pass over the interesting achievement of our friend making his own fortune, with the indifference of the dandy, who "knows nothing about trade." We let his liberality off quite as easily. And as for his ability in fulfilling the duties of his high estate, that is an honour which brings with it its own recompence. *No.* In one of those famed hostelries, where turtle should abound, and the loving cup go round, we present a testimonial to one of the Sheriffs of London "in appreciation of his continuous efforts to promote the interests of agriculture."

This, after all, is but a fitting epilogue to the closing of Tiptree Hall. The actor announces his farewell performance. He has gone through his part with plenty of spirit and humour. And now, when the curtain has fallen, we call him again before us, to throw our bouquet at his feet, and give "hand" and a "bravo!" to one who has afforded us so much amusement. He comes led on by another amateur, who has often ere this played in the same pieces with him. Although still arrayed in the gorgeous attire of the ambitious character he has lately been studying, we recognize only the Farmer Broadcast of former times. And memory straightway reverts to the no hedge-rows, the thin seedings, the liquid manuring, and the many other "points" of his famous lecture. We wonder whether he would give us it once more if we were to ask him. And just as we are all breaking out into an *encore,* it is whispered round the room that he is going to do so?

A few weeks since there was sent to the London Tavern, in Bishopsgate-street, "a superb piece of plate of a very rich design in the Renaissance style." Designed—by Mr. Digby Wyatt—for use as well as ornament, this was surmounted with a moderator lamp. Gradually descending, we come to four figures seated upon a platform, and lighted up by candle branches. These turn out to be the pleasant people to whose happy union we have already adverted:—Agriculture, Commerce, Peace, and Plenty. Coming still further down, we have a farm-yard scene, a group of implements, a coat of arms, and this interesting key-note:

"Presented to John Joseph Mechi, Esq., F.S.A., of Tiptree Hall, Sheriff of London and Middlesex, by 420 of his friends, in token of their appreciation of his continuous efforts to promote the interests of Agriculture, 1857."

As we said before, the Sheriff of London and the interests of agriculture; or in other words, "Agriculture, Manufactures, and Commerce." Never was there so propitious an omen as this celebration would seem to offer us. Since George the Third was a farmer king, Coke of Holkham made a lord, or Prince Albert fattened his first Devon, we have come under no such encouraging auspices. The Sheriff of London and Middlesex is honoured not as a sheriff, but as a farmer. His portrait is handed down to posterity, not in the fine frill and grand gold chain of City etiquette, but with the knowing white hat and blue tie in which it was his wont to trudge over the stubborn lands of Tiptree.

At a very off-season of the year, somewhere between eighty and a hundred of the subscribers attended the presentation dinner. Lords Lonsdale, Harrowby, Essex, and Shaftesbury wrote to regret and apologize for their absence. Of the agricultural mind that did present itself, there were such component parts as Mr. Clutterbuck, from Hertfordshire; Mr. Beale Browne, from Gloucestershire; Messrs. Beadel and Son, of Chelmsford; Mr. Cutts; Mr. Eve, of Ockendon; and Mr. Chancellor, also from Essex; the Reverend Mr. James; and another Reverend gentleman, more identified with Tiptree and its doings, the Reverend Mr. Wilkins, of Wix. Then, in one little party, there were those two famous implement-makers, Messrs. Garrett and Crosskill; Mr. Tuxford, of the Strand; and Mr. Bullock Webster. Amongst the other seventy or eighty, there was a strong detachment of reporters, an under-sheriff or two, but, as a rule, a very marked absence of City magnates. They were touring, or shooting, or sea-faring. At any rate, the honoured guests of Tiptree, "the fine City folks," who of all others were welcomed there, and welcomed after their own fashion too, appear to have forgotten nearly all about it. Despite a few amantium rixæ, Mr. Mechi's first love seems to be the truest to him after all. It generally is so. And now, when he is going to turn his back upon her, and shut the door in her face, she behaves to him better than ever. It is the old story over again.

Mr. Bateson, who presided, and with whom the testimonial originated, farmed some years since in Herefordshire, where he became rather noted for the trained troops of boys he employed on his land. He spoke to the toast of the occasion something in this wise:—"He was well aware how difficult a task it was to express in adequate terms the sentiments they all entertained for his excellent friend their worthy guest. He was, on the other hand, well aware that no language he could use would be sufficient to do justice to the noble efforts he had made to promote the cause of agriculture in this country. They had, most of them at least, witnessed from time to time, down at his farm at Tiptree Hall, the wonders he effected by skill and perseverance —they witnessed a large barren heath converted, by capital, skill, and industry, into one of the richest and most fruitful portions of England, and crops which, in yield and excellence, could not be exceeded in the richest parts of the kingdom. That had been partly effected by the introduction of machinery, not as a means to set aside human labour, but to aid its developement, and to divert its course in such a manner, that intelligence rather than mere machinery, might become the great characteristic of productive industry. Many had often suggested ideas which practice never carried out; but a different course was at all times pursued by their excellent and worthy guest. The consequence of this was, that the benefits derived were not to be found exclusively at Tiptree Heath, but throughout the whole country; and that statement was borne out by letters which he had received from various parts of the kingdom, and of which he was bound to say their worthy guest ought to feel proud. Let them look at the thousands of acres of land, scattered in every direction, which might have remained uncultivated and unimproved if Mr. Mechi had not turned the attention of the agricultural world to the subject, and induced landlords and tenant farmers to come forward and make those improvements which were so imperatively required. Let them look at the miles and miles of hedge-rows reclaimed and improved, and made to yield the finest produce, but which would have ever remained useless had it not been for his exertions. Let them again look at the prejudices which he had to encounter before his views were adopted, and the great improvements which followed, the addition to the comforts of a vast class of the people not inaptly described as the sinew and nucleus of the land, and some idea might be formed of what Mr. Mechi had done towards promoting the prosperity of the country. He had himself been informed by one of the highest agricultural authorities of the present day, that Mr. Mechi had put some hundreds of pounds in his pockets, not only in having pointed out to him that which he ought to do, but in being warned against what he ought to avoid."

We are by no means inclined to be over-critical at so pleasant a proceeding, and we shall so let Mr. Harker at once proclaim "silence" for Mr. Sheriff Mechi. Is this really the last agricultural lecture we are to listen to?—

"Deeply grateful as he felt to the gentlemen who had presented him with so magnificent a testimonial, he could not help regarding it as due more to the principle of which he was an advocate than to the man. He could take no credit to himself for what he had done with regard to agriculture. It was true that he had bought one or two farms as an investment; but having done so, he did as every tradesman or citizen of London would do—looked to what were likely to be the returns. If they bought a house and they found it dilapidated, they would endeavour to place it in a proper condition. He found that his farms were not making a satisfactory return, and he therefore took them into his own hands with a view to their improvement. Fifteen years had elapsed since he had expressed an opinion that, in the majority of instances, the land was unfarmed; and a recent tour through the country had convinced him that he was not then wrong—indeed, that the same argument would still hold. He was convinced that, speaking generally, although there were many honourable exceptions, £25 per acre was still required to be expended in drainage and other improvements, in order to bring the heavy-lands into a proper productive condition. They all knew what was the condition of the cotton trade in this country before the introduction of steam, and that what then cost 1s. 6d. or 2s. to produce was now accomplished for one-tenth of the amount, and they were enabled to envelope the whole world in calico, and that, too, without reducing the employment of the working man. If the same principle were applied to agriculture, he felt no hesitation in affirming that, instead of having to look to foreign countries for one-fourth or one-third of our supply of corn, we would be enabled not only to produce sufficient for our own consumption, but something to exchange for luxuries from other countries, be it champagne or turtle. All that he had done was to invest a large capital in a comparatively limited area of land, and he was happy to say with success. A short time since he was dining with his labourers at a harvest-home, and he got into conversation with them relative to what they made of their garden plots, of perhaps the eighth of an acre in extent, and he found with great satisfaction that by proper economy and by means of their pig they made on the average forty times as much per acre as the farmer made upon the ordinary system of culture. He was convinced that the more they introduced steam-ploughing and improved cultivation the greater would be the produce and the more independent would the country become of foreign supplies. If anything he had done had tended to promote improvements in agriculture, he could not feel otherwise than much gratified, and the testimonial of that evening showed how highly his efforts had been appreciated. He felt the more highly honoured on the present occasion because he was not only surrounded by some of the first farmers in the kingdom, but by many of the manufacturers of agricultural implements, whose energy and ingenuity had brought farming to its present high position."

With twenty-five pounds more per acre invested in our heavy soils, and with every farmer making forty times—only forty times—as much manure per acre as he now does, agriculture may yet flourish. But then for this economical manufacture of manure must not we have a pig and a cottage and a labourer's family upon every acre? Or how else is it to be done? It is absurd to suppose Mr. Mechi can give us a *last* lecture. The country will never submit to it. He may say "not at home" at Tiptree. He may dress himself up in gold chains, and ride about in gilt coaches, and call himself a sheriff, or an alderman, or a Lord Mayor, or what he pleases, but agriculture will not spare him. He has lots to tell us yet. And first of all how to make forty times as much manure per acre as we do now. They are doing it at Tiptree already. Come, now, recollect the testimonial, and tell us a little more about it.

THE PRESENT AND THE PAST OF THE IMPLEMENTS OF AGRICULTURE.

At a period in our social history somewhat more than a thousand years ago, such was the poverty of the husbandmen and the wretched condition of husbandry, that it was the custom for six or eight individuals to club together their scanty means to procure a plough, and oxen wherewith to drive it—hedging themselves round in their social organization with many quaint laws, which in the minuteness of their details showed how important to them was their association together, how miserably scanty their means, when they had to contribute their mite to the purchase of an instrument—and this so rude, that by enactment about the same period we have alluded to, no man was allowed to guide a plough unless he could first construct it, and make, moreover, the twisted willow withes with which his wretched oxen drew it.

In the year of grace 1857, a town of England, rich in historical associations, possessed of monuments older far than the period we have above referred to, welcomed with arch triumphal, and banners flaunting, the annual gathering of an agricultural society, numbering its members by thousands, contributing of their means, not like their brethren of old, to secure assistance in their individual operations merely, but to collect information and detail experience, and to scatter them broadcast over the land, that all might participate in the benefit of their association. At this great gathering of agriculturists, it will be the duty of the historian in after-times to relate, such was the condition to which the science of agriculture had attained, and such the extent of the mechanism which aided her operations, that of parties exclusively devoted to the making of these aids, no fewer than 154 exhibited nearly 1,000 implements, so wide in their range of operations that a classification of them would take up nearly 100 divisions. These two periods we may take to represent the past and the present condition of agricultural mechanism. Nor let us, in the strength and vigour of our riper years, think slightingly of the humble efforts of those who have preceded us in the march of civilization. Who can tell how much of our life-energy we owe to the agricultural societies of far-off times? Or how much of that greatness and social security we enjoy, to those who held their meetings in troublous days, with the sound, mayhap, of the war-shout in their ears, or the crackling of blazing roof-tree and blackened house-walls? And if there is truth in the doctrine of him who was not wont to write genially or kindly, that "He who can make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, will deserve better of mankind than the whole race of politicians put together"—let us not arrogate to ourselves the boast of having done all the good in this way. But with the recollection of our recent triumphs, let us, with all humility, remember the claims of the pioneers of the science. Nor will it read us a useless lesson if we recall to mind the truth, as we read—and reading, mix pity with our wonder—of the state of our science years ago, that the time may come when some future agriculturist may peruse with no less wonder accounts of what we are doing now. When he will think how little room there was for us to boast of our nineteenth-century doings. For the signs are now rising thick around us, to warn us that we are about to enter on a new field of discovery and mechanical application. And that however nobly our mechanicians have met the requirements of our improved field-practice, the time is fast approaching—if indeed it has not already arrived—when more will be required of them. When new opportunities will be accorded them, of gaining fresh laurels and making new triumphs. We live, at all events, in a transition-time. Already, in imagination, the sound of the *steam* whistle drowns that of the *ploughboy;* the snort and puff of the engine mix mayhap, to ears sentimental, harshly with the sounds of rural life, and the black smoke cloud darkens the grain fields or the shocks of smiling corn. In many of our departments we have already got to the ultimatum—to that point beyond which, with our present implements, we can go but little further. Again, a careful, a philosophical survey of the whole range of our mechanism must force the—to many unwelcome, but not less unimportant—suggestion, that much of it is a mere necessity of a bad system of working. We invent an implement at the expenditure of much thought; and the farmer at much cost of money uses it, to get rid of an evil which, by going more philosophically to work, we could prevent altogether. We expend much time and money in getting rid of effects, and effects merely, without bestowing a thought on the cause. We would think little of the wisdom of the manufacturer who would prefer to buy, and keep working, at a costly rate, a machine to do away with certain prejudicial peculiarities in his materials, the presence of which could have been prevented by a little expenditure of trouble at some certain stage of his proceedings. Yet this is what many of us do in our field operations. We bring into use a complicated array of mechanical movements or tedious processes, to undo evils, which if we do not altogether cause, we do little to prevent, while prevention may be, or is in our power. And although able men and acute thinking minds have been for some time, and are now pointing the way to a more economical, because more philosophical way of working, such is the force of prejudice, and such the trammels of custom, we are content to go on in the same path which our fathers have trod before us, and use our implement or implements—we name no particular one just now, though we shall hereafter—because it has been used before us. "Our fathers did it. Say, are we wiser than they?" It is not philosophy—nay, further, it is not common sense, to keep perpetually striving to improve the construction or the details of an implement (mark here, again, that we refer to no one particularly, but take the question in its broadest phrase)—without, in the first place inquiring whether its principle of operation is or is not the right one. If it is, then go on improving: too much cannot be done in this way. But if it is not—an alternative worthy of consideration, truly—it is (not to mince the matter, but to speak English truth in an English way) but the greatest folly to trouble ourselves further about it. We may improve its details to enable us to do better work of such a class as it *can* do, than we could do without such improvements. We may get better work thus, but we can never get good. An implement in its principle bad, can simply, from being bad, in nowise give us good work. We may—nay, we can—improve an implement till we get the very best work of its *class*; but with thinking men this is not the question. The point is, is this the *class* of work we *want*? Now, it seems to us as if at the commencement of the new era of agricultural progress, which we may assume dated from the first meeting of the Royal Agricultural Society, certain implements and modes of procedure were assumed, or tacitly agreed upon as right in principle; and that which was chiefly wanted was the improvement of their details. This system carried out, resulted in vast improvements being effected, and also in the production of new machines, but all in one way or another connected with the old or the established principles of procedure. This went on for a long time, no active signs being very visible that any one doubted the accuracy of these principles; or were anxious to inquire whether, after all, we were going in the right way or not. In process of time much real progress had made itself a thing understood; but certain limits began to appear—limits doubtless far beyond the boundary line of old practice, till men were prompted to ask why those limits could not be passed, as had been those of the olden times. It was at this stage of progress that men began to agitate the question—so pregnant with meaning—have those implements and those old modes of procedure the power of enabling us to exceed those limits? The result of the inquiry being by many able men in the negative. Then began the period of the transition time, to which we have already alluded, and which now engrosses the attention of the thinking man, and claims the interest of the practical agriculturist. Now, with the fact before us that some able men have broadly asserted that in many things we are going upon the wrong tack—that we shall speedily get to the end of *that*, if we have not already got so—and that will *not* be where we want to go—it can, at all events, believing this or not, do us no harm, but will on the contrary do us much good, to inquire "whether those things be so or not? It will not—at least it ought not to—do to say to these obtruders, if obtruders we think them, in the words of Felix to Paul, "Go thy way for this time: when I have a convenient season I will call for thee." Not a few amongst us deem this the time steadily to inquire what can and ought to be done to set at rest those questions which are now agitating the agricultural world. And apart altogether from this consideration, our readers will not think it amiss at the close of a season, which has shown, more than any preceding it, to what comparative perfection we have attained under our present system of working, to glance at the principles of the Present, and to endeavour to deduce therefrom considerations which may enable us to have some idea of future agricultural mechanism.

EFFECTS OF CLOVER-HAY ON ANIMALS.—Some late writers have taken the position that clover-hay produces a most injurious effect on domestic animals, particularly horses; and that to this cause the great increase of diseased horses is to be attributed. We lately heard a farmer affirm that he believed the introduction of clover-hay into general cultivation the greatest curse yet inflicted on the country, and assigned, as a reason for this singular opinion, its effects on animals when used as a fodder. Late English writers have attributed to this kind of hay the prevalence of hove in horses, and the great increase of other diseases that affect the respiratory organs. This is a most important subject, and should receive a full investigation. Clover is too important a plant to be discarded or condemned, except upon the most satisfactory evidence. Its value as a fertilizer and a preparative for wheat, to say nothing of its use for pasture and hay, would demand that it should not be condemned unheard. For ourselves, we have very little belief in the injurious properties assigned to clover. We have used it constantly for pasture and for hay, more than thirty years, and never, to our knowledge, has any animal suffered from it; certainly no horse has been taken with the hove when fed on it, or while in our possession. As hay for sheep, we have considered it unrivalled, and should have no fears that any stock would not winter well with a supply of well-cured clover-hay. And here lies, we think, the great source of objection to clover-hay. It is too often imperfectly cured. To save the leaves and the heads, which are apt to fall in handling or curing, the hay is put into the barn while the large stems are full of moisture or the natural juices, and the fermentation which ensues causes the whole mass to become damp; and if not spoiled wholly, it becomes mouldy, black, and when used raises such a dust, it is no wonder that horses and cattle are choked or their lungs destroyed. Our experience shows that clover may be perfectly cured without losing any of its valuable parts; cured so that when fed out, no more dust will be flying than from timothy or herds-grass, and we shall be slow to believe that from such hay any injury to animals ever ensues.—*Ohio Valley Farmer.*

PATENTED INVENTIONS RELATING TO AGRICULTURE.

"THE MECHANISM OF STEAM CULTURE."

(Concluded from page 315.)

In continuation of our subject, we now come to describe the general arrangements and mode of operation of Mr. Romaine's machine, so well known through the exertions of Mr. Mechi, who, on its first introduction into this country—for it is Canadian in its origin—augured great things to agriculture from its use. It has also attracted considerable attention, from the fact that it is the machine which is aided by funds expressly voted by the Canadian Legislature, anxious as it is practically to promote cultivation by steam. It is as well to note here, that although the expectations of the inventor and his friends have not been fully realized, still every effort is being made to perfect the details of the apparatus; and the inventor is sanguine, we believe, of success. At the Agricultural Exhibition at Paris, although not fully prepared to exhibit, Mr. J. Evelyn Denison, M.P. (who drew up the Report of the Exhibition at the request of our Government), reports to have seen it in a field near Paris "carrying its own boiler and engine, travel by its own locomotive power 100 yards up the field, and break up and cultivate the land in its course."

Mr. Romaine's machine is secured by two patents, one under date May 10th, 1853, No. 1151; the other Jan. 6th, 1855 (the price of the specification of the first 1s. 2½d., the second 1s. 1d.). In the first patented machine, the steam-engine, as in Mr. Bethell's (described in No. IV.), worked the diggers only, the progression over the land being effected by horse-power. This defect—for defect assuredly it is, for employing steam as a mere auxiliary to horse-power is but half work—was obviated in the second patent, in which means were secured by which the steam-engine gave locomotive powers to the apparatus. The arrangements of this second improved machine we shall alone describe.

The motive power consists of two horizontal engines, between which a vertical boiler is placed, the digging apparatus working in front of these engines, but at a lower level than the framing on which they are supported, the framing branching downwards to afford a bearing for it. The framework is supported at one end by a drum working on a horizontal shaft, this drum serving at once as a "land roller" and to support a portion of the weight of the apparatus when at work. In advance of the digging apparatus, and nearly in a line with the centre of the vertical boiler, bearings are provided in the framework for two large loose wheels; these have very broad tires, in order to prevent them sinking into and poaching the soil. The whole framework vibrates on the axles of these driving wheels; and a tipping apparatus is provided, by which the end can be raised or lowered, thus adjusting the depth to which the cultivating cutters enter the ground. In contact with these main driving wheels, two rollers, a little longer than the breadth of the tires, work: the peripheries of these rollers are covered with india-rubber or other elastic material. These rollers are made to revolve by the action of the steam-engine; and the friction arising between these peripheries and those of the main driving wheels causes the latter to revolve; a progressive motion is thus given to the machine, and the cutters of the cultivating part are kept up in the soil on which they are to operate. By proper gearing the rollers can be made to revolve in an opposite direction, thus causing the main driving wheels to revolve backwards, and to release the cutters from operating on the soil.

The digging apparatus consists of a cylinder supported on a central shaft, working at right angles to the length of the framework; to the cylinder are bolted a set of radiating arms, these cleansing the knives or cutters which act on the soil. The radiating arms are set at equal distances in the cylinder, and the knives or cutters are so arranged that in the revolution of the cylinder they are most favourably disposed for entering the earth—they are set either to run parallel with the shaft or axle of the cylinder, or to run spirally or inclined thereto. The knives may be formed in double irregular lengths, so as to present points and inclined surfaces to the earth during working. The digging cylinder is worked by the engine as follows—the bearings which support the horizontal axis of the cylinder affords space above for two "stops," in which the lower ends of two vertical shafts revolve, the upper end revolving in pedestals attached to the horizontal part of the general framework. To the upper extremities of these shafts cranks working horizontally are keyed in, to the crank pins of which the connecting rods of the two horizontal engines are jointed. Mitre or bevel wheels are keyed into the lower extremities of the vertical shafts, and locked into similarly pitched bevel or face wheels, fixed to the extremities of the axle of the cutting or digging cylinder. These latter wheels are connected within the open ends of the digger cylinder, so that the latter can work close to the ground without interfering with the action of the gearing. The vertical shafts also give motion to the rollers previously described, which act upon the main driving wheels. This is effected through the medium of mitre-wheels keyed on the vertical shafts at a point near the middle of their length; these take into bevel-wheels of like diameter, keyed on the end of horizontal shafts revolving in bearings projecting from the sides of the frame-work. These horizontal shafts have clutches and double-bevel pinion arrangements for driving intermediate bevel-wheels in alternate directions. These intermediate wheels are keyed on, one to each extremity of the shaft, on which the rollers with India-rubber peripheries are fixed. By means of the clutch the main driving-wheels can be driven either backwards or forwards: keeping the cutters up to their work, or releasing them from their action in the soil.

We now come to notice the steam cultivator patented by Mr. Chandos Wren Hoskyns, well known as the author of "Talpa, or the Chronicles of a Clay Farm.' (Patent dated Aug. 13th, 1853; No. 1899. Price of specification 8½d.) The principle upon which the machine works is so graphically described in the work above alluded to, that we cannot do better than here extract it: "Imagine such an instrument (a revolving-toothed instrument, with a space as broad as a hay-tedding machine or Crosskill's clod-crusher), not rolling on the ground, but performing independent revolutions behind its locomotive, cutting its way down, by surface abrasion, into a semicircular trench about a foot-and-a-half wide, and throwing back the pulverized soil (as it flies back like the feet of a dog scratching at a rabbit-hole); then imagine the locomotive moving forward in the hard ground with a slow and equable mechanical motion, the revolver behind, with its cutting-points (case hardened) playing on the edge or land-side of the trench as it advances, and capable of any adjustment to cause a fine cutting; moving always forward, and leaving behind, granulated and inverted by its revolving action, a seed-bed seven or eight inches deep; never to be gone over again by any implement, except the drill, which had much better follow at once, attached behind with a light bush-harrow, to cover the seed." Reserving for future discussion this principle of action, we shall proceed very briefly to describe the method by which the inventor proposes to apply it practically to the cultivation of land, as illustrated in the patent to which we have already alluded. The framing of the machine is supported at one end by two main driving wheels of broad tire, and at the other by two steering wheels, also with broad peripheries. At the back end of the frame the steam-engines, of the horizontal class, are placed; the boiler—a vertical one—being at the opposite end, near the steering wheels. The framing near the engines takes a burst forward and downward, and provides, at its lowest extremity, bearings for the horizontal shaft of the "tiller;" this consequently works a little below the centre of the main driving wheels, and at some distance in advance of them. The shaft of the tiller works at its extremities in bushes, which are not permanently fixed in the framing, but slide up and down in guides or slots made in it. To these bushes screwed rods are connected, these being carried upwards, and provided at their upper extremities with screw wheels, which take into endless screws keyed to the extremities of a horizontal shaft revolving parallel to the shaft of the digger. A winch or lever is attached to this horizontal shaft, by turning which the endless screws actuate the screw-wheels, and raise or lower the bushes in which the shaft of the tiller revolves; by this means the depth to which the cutters penetrate the soil can be easily regulated. Motion is given to the tiller or digger shaft by means of an endless gearing-chains, which pass over drums keyed to the end of the main shaft of the steam-engine, and to the ends of the digger shaft. The relative speeds of the engine-driving shaft and that of the digger may be regulated by changing the diameter of the charge wheels. The progressive motion of the machine is maintained thus: to the axle of the main driving wheels a large bevel wheel is keyed, this gears with a smaller wheel keyed to the lower end of a shaft set angularly, to the upper end of which a screw wheel is fixed, this taking into an endless screw in the centre of the main driving shaft of the steam-engines. The motion of the cutter or digger, and the progressive motion of the machine, being thus derivable from the same shaft, an accurate adjustment is capable of being made between them. Means are provided by which the revolving action of the cutter or digger can be maintained whilst the progressive motion of the machine is stopped. The "tiller" is formed by a series of discs fixed in a central shaft; each disc carries at the extremities of a diameter two cutters, the extremities of which are shaped like the cutting tool of a paring or slotting machine. These cutters move in slots made in the arms of the disc, and are capable of adjustment—that is, of being brought nearer to, or further from, the periphery of the disc. The discs are so arranged on the shaft, that the whole breadth of the cutters which they carry act in succession in the soil; by this means they have a self-cleaning action, and, as they lap with one another, no interspace of soil is allowed to escape unsevered from the land-side, or transferred to the back of the trench, which is thus kept clean by the action of the instrument. In bringing the machine into operation, the cutter, or digger, is placed clear of the ground; the engine is then set to work, causing the digger to rotate. The winch, or handle, of the endless-screw shaft is then worked so as to cause the bearings of the tiller shaft to descend in the guides; the cutters are thus brought gradually in contact with the soil, and the trench formed. The locomotive gear is then put in action, when the progressive motion of the machine commences; and as it advances over the land, the cutters abandon the soil in its progress. "This adaptation," says the inventor, "of the motion of progression to the velocity and capabilities of the tilling instruments forms a prominent feature of my invention, and without it a proper degree of cultivation cannot be effected."

We now turn our attention to the machine of Mr. Ford,* which has for its object to cultivate the ground by a series of spades or forks, to work which the power of steam is applied. The mechanism by which the movements are effected is peculiarly ingenious, and well deserving the attention of the agricultural inquirer; it is so complicated, however, that drawings will be necessary, to make them clear to the reader. In the absence of these, we must be content with presenting a short abstract of its principal movements.

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* Patent dated June 12th, 1855, No. 1,343; price of the specification 2s. 10d. The letters within brackets, as (A), are added to facilitate reference to the various parts of the mechanism.

The trenching three-pronged forks are attached to a central axis (A), which revolves on bearings or collars (B), these being supported by, and capable of sliding up and down, in the slots of a curved frame (C). The sides of this frame have racks into which endless screws (D) take, the screws revolving on studs in the collars or bearings (B). The extremities of the screws (D) are fitted with small bevel wheels, which take into a similar wheel fixed on the ends of the shaft or axis (A), this being provided at each extremity with a small hand wheel (E). By turning either of the hand wheels (E), the endless screws (D) are made to revolve, which take into the racks in the inside of the curved frame (C). By this means both ends of the shaft or central axis on which the diggers are fixed may be raised or lowered simultaneously, and its parallelism insured. The curve of the frame (C) is struck from the fly-wheel or crank shaft (F) of the horizontal steam engine (G). The digging frame is composed of a pair of wheels (H) fixed on the extremities of a hollow axle, revolving freely on the central axis (A); the arms of these wheels are slotted or grooved, the shafts of the spades or forks sliding up and down in these. The peripheries of the wheels (H) are provided with ratchet teeth, into which levers or palls (I) gear; these levers are actuated by eccentrics or cranks (J) fixed on the main shaft (F). The throw of the eccentrics (J) is so arranged that each upstroke of the levers or palls (I) shall lift the spades or forks from the ground, and bring forward the next set of spades or forks, ready to be pushed along the groove or slot of the arms of the wheels (H). The spades are pushed into the earth in a manner corresponding with the action of the foot in "hand-digging," by what the inventor calls "treaders;" these work in guides, the extremities of which bear on and work loosely upon the crank shaft (F) and the collars (B). The "treaders" have the necessary reciprocating movement in the slides given to them, by means of cranks fixed on the main shaft (F). As the wheels (H) revolve, they lift the forks and their portion of earth upwards; and another movement of the machine turns the shaft of the fork round, so as to completely turn over the slice of earth. This turning-over movement of the forks is effected as follows—to the shank of the fork turning sockets are fixed, and the upper extremities of which are fitted with small toothed wheels (K); these are actuated by sliding bars provided with racks (L) jutting into the teeth of the cog wheels (L′). The sliding bars are moved by guides or grooves (M) fixed to segments (N), which form guides or rests for the traverse of the spade-bar after it has been pushed into the ground by the "trader." These guides (N) are attached to and carried forward by the wheels (H). This groove or slot (M) being stationary with respect to the revolution of the digging frame (H), will impart a lateral motion to the sliding bars with their racks (L), when their ends pass above that portion of the grooves (M); but they will be held stationary when passing along or over that part of the groove (M) which is straight or parallel to the plane of revolution. This groove or slot (M) is also carried beyond the segments (N), by fixing it to the collar (B), so as to work the sliding bars through the entire revolution of the digging frames; or inclined bars (O) may be made to project from the inside of the wheels (H) of the digging frame, and then as they revolve, made to come in contact with lugs projecting from the sliding bars or racks (L). The inclination of the bars (O) is such as to actuate the sliding bars (L) a sufficiently long time that the rack may turn the cog wheels (L′), and of course the fork shafts to which they are keyed, completely over or half round; and then to turn them a quarter of a revolution back again. They are held in this position until they pass edgewise between clearers (P). These are fixed on the shaft of the levers or palls (I), and have thus a reciprocating motion given to them. On the forks passing through between the clearers, they are passed with the slots or guides in the arms of the wheels (H); when by another inclined surface in the guides or grooves (M), or by the inclined bars (O), they are turned into the proper position to enter the ground, and are passed down the slots and made to enter the ground by the action of the "treaders."

The direction in which the forks are made to turn over may be changed as desired, in order that they may either turn over towards each other in pairs, or in any other direction, and thereby deposit the sods or spits so as to form furrows or ridges, or leave the ground flush or bare. This is effected by having an upper or under bar (M) with rack gearing into the cog-wheels (L′) at opposite ends of their diameters; so that the direction in which the diggers turn depends upon whether the upper or under bar is in gear with the toothed-wheel (L′).

The diggers are kept up to their work by giving an intermittent traverse motion to the whole machine; this is obtained from eccentrics or cranks in the main shaft (F) working rods, in the extremities of which are pulls working into ratchet-edged pulleys fixed on the main driving-wheels.

When the machine is to be transported from one place to another, motion is given to it by a belt passing over a small pulley in the main driving-shaft (F) of the engine, with a larger pulley on the axle of the driving-wheels—an arrangement of pulleys and belts being used to drive the main or front wheels, which are used to steer or guide the machine in its progress.

Mr. Ford, in the same patent, describes other arrangements of mechanism, by which the operations of harrowing, clod-crushing, forming of furrows, and hoeing may be performed by the power of the steam-engine which works the diggers already described. The various implements necessary to perform the above operations are capable of being easily adjusted to the curved frame (C). In removing an implement from this frame, it should be lowered by the small wheels (E) and screws (D) until it touches the ground; and then the working gear of the main shaft detached, and the sides of the curved slot removed by unbolting—the process being reversed when an implement is to be put into the curved frame (C). We here give a brief notice of the peculiarities of the different implements; and first of the "cleaning harrows." A series of projecting prongs or spikes are fixed to a number of bars, these being jointed at the ends to two endless gearing chains, supported by and running upon two pulleys. One of these is attached to the upper end of the curved frame (C), the other to the lower extremity of a bar jointed to the frame at its upper end. This bar projects at an angle from the frame, so that its lower extremity is in advance of and considerably below the level of the upper pulley. A set of cleaning chains are placed on the outside of the bars of spikes, one on each side of every row. These chains pass in direct lines from pulley to pulley, not at one point; the gearing chains, with their attached bars, pass over a small pulley, which causes them to be lifted up, passing the spikes from the crown to the point along the cleaning-chains, which thus free them from all adhering matter. A receptacle is provided for the weeds; and the lower pulley can be raised or lowered by a winch, so as to regulate the depth to which the spikes work.

The "clod divider" consists of a horizontal shaft revolving in bearings provided in a hanger or bracket suspended from the curved frame. Motion is given to it by a belt passing over pulleys, one of which is keyed on the main shaft (A), the other to the centre of the horizontal shaft. To the latter a series of prongs or cutters are attached, these revolving between other cutters which are fixed to the hanger or bracket. The clods brought up by the action of the revolving cutters pass between them and the fixed cutters, and are divided, the fixed cutters tending also to relieve the revolving ones of extraneous matter. Three bars are provided between the cutters, to prevent the clods flying too much, or being scattered by the rapid rotation of the revolving cutter.

Of the steam-cultural implements invented by Mr. Ford, we, at the conclusion of our last article, described two, the revolving or "cleaning harrow," and the "clod divider." We have next to notice the arrangement of mechanism, which he terms a "furrower." From the description of the steam-digging or trenching apparatus, which we have already given, it will be seen that the land will be left without any of the regular divisions of surface which are the result of ordinary ploughing. To give these to the land dug or trenched by his steam-digger, is the work of the "furrower" invented by Mr. Ford. To the lower end of the curved frame of the principal part of the machine containing the motive power, two brackets (A A′) are suspended at a short distance from each other; these carry two bars (B B′) which are thus parallel to each other. The two brackets (A A′) aer joined to the framing, and to the inside of the parallel bars (B) a lever or rod (C′) is fixed, the upper end being fixed to the main shaft of the machine (marked C in our former description). By turning the shaft the lever (C′) may be raised or lowered, and with it the lower extremities of the brackets (A A′) and the parallel bars (B B′). A series of double turn-furrows, the lower extremities of which are shaped like the letter V, is connected with the bars (B B′), turning at one end, in a vertical direction, in eyes through which the bar (B′) passes, the other ends being adjusted by pins in the second bar (B). By raising or lowering the brackets (A A′) by the lever (C), and by adjusting the turn-furrows on the bars (B B′), furrows of different sizes and depths may be obtained.

The hoes, which can be attached to the main machine whenever this operation is required to be performed, are of two kinds, the "horizontal revolving" and "vertical revolving." In the former a series of vertical spindles (A) revolve in bearings or sockets attached to two horizontal bars (B C) placed one above the other. The lower extremities of the spindles carry (A) the hoe-cutters (D), of a circular, curved, or straight form; these cutters being also supported and the spindles (A) steadied by guard-brackets fixed by screw-bolts to the lower bar (B). A shifting-piece joined to each guard-bracket is so adjusted that the cutter just touches it while revolving. By this arrangement the cutter is kept clean. This cleaning of the cutter is also further attained by making it revolve within a short distance of the bottom of the guard-bracket. A rapid motion is given to the spindles (A) by an endless belt passing round and between small wheels or pulleys fixed to the spindles; this belt receives motion principally from a larger pulley fixed on the main shaft of the machine. By means of a lifting lever attached at one end to the horizontal bar (B) and to the main shaft of the machine, the depth to which the hoes cut can be easily regulated. As the lifting of the hoes, however, by means of the lever, would cause them to rise from the ground in a curve, the centre of which would be the centre of the lifting lever, means are provided, by the application of jointed levers resembling the parallel motion of the beam steam-engine, by which the hoes, however raised from the ground, always maintain a vertical position. The arrangement of the mechanism of the revolving hoe presents a strong resemblance to the spindles and bobbins of the cotton roving or stabbing frame. In the vertical hoe the working of the earth is effected by a series of three-armed discs, keyed on to a horizontal shaft, the extremities of the arms being provided with cutters: shields are provided to hold down the earth while the hoes are working through it. The patent also describes a hay-collecting and hay-making apparatus, and a machine for digging deep drains: these the nature of our article precludes us from noticing; but we name them here, as they may interest some readers who may wish to consult the specification.

We now come to the consideration of the second class of steam cultural mechanism—namely, "mechanism by which the cultivating implement, 'plough,' 'rotary cultivator,' or digging machine, is dragged over the land by the power of steam." Before, however, proceeding to describe the patented machines by which this "traction" is proposed to be effected, we deem it advisable to describe a few of the implements which seem to be peculiarly, or are specially, adapted for this method of "steam traction." These will comprise rotary cultivators, and special arrangements of grubbers, scarifiers, or ploughs.

The first machine of this class to which we direct the attention of the reader is that invented by Mr. Bernhard

Samuelson,* the well-known agricultural implement maker, of Banbury. It enjoys considerable reputation as a good pulverizer, and a "cleaner" of the soil, bringing the couch-grass and other weeds to the surface, ready to be collected by the harrows or by hand.

In this machine, the tines or forks are intended to act after the manner of the trenching-fork or spade, and are made of steel (cast or double-shear steel, not hardened) throughout—at least, at the parts exposed to strain in passing through the soil. A curve is given to them, so that the extremities shall enter the ground almost perpendicularly; and their section is square or diamond-shaped, set on the angle, so as more easily to break any extraneous substances (as stones) which they may meet with in the ground. Their extremities are pointed, like a fork or like a chisel, being more or less acute, according to the soil to be dealt with and the depth to be penetrated. The fork-point has, however, been found to act well on all soils. These prongs or forks are found to penetrate the soil by the mere weight of the machine; the inventor stating that, with a weight of 18 cwt., the prongs are forced into the ground, in ordinary soils, to a depth of 10 inches, and that, at this depth, their strength is such as to resist any strain caused by the draught of as many horses as can be practically applied to the machine. The steel forks or prongs (A) are fixed at their upper ends between two discs (B), bolted together, six pairs being apportioned to each pair of discs. The prongs are made in pairs, with a curved junction, so as to be more firmly bedded between the discs. A number of these discs rotate freely on a central shaft (C); and between each pair, and rotating on the same central shaft, a ring (O) is placed, which keeps the discs apart, and clears their side-surfaces from adhering soil. The circumferences or peripheries of the discs are also kept clean, and the soil kept clear from the prongs, by "cleaners," (E) hung freely on a shaft (F) placed above and a little behind the shaft (C) on which the digging wheels (B) rotate. Each "cleaner" (E) is in contact with the circumference of two half-centres of the discs (B), and is also provided with a projecting tongue, which passes into the space between adjacent centres, and limits its lateral play upon the shaft (F) on which it is hung. The cleaners (E) are provided with weights at their extremities, to keep them to their work.

The "digging discs" (B), the "rings" (D), and the "cleaners" (E), are all connected to an inner frame (G), which is itself hung to a front bar, which front bar connects two frames (H H), one on each side. These frames are provided—at the end opposite that at which the horses are attached—with toothed quadrants (I I), and support the wheels (K K) on which the whole machine travels from place to place, and which also serve to regulate the depth to which the prongs are allowed to enter the ground. At the back part of the "inner frame" (G), which bears the diggers (B), a shaft (L) revolves in suitable bearings. At each end of this shaft (L) pinions (M M) are keyed, which take into the toothed quadrants (I I). Near one extremity of the shaft (L), a bevil wheel (N) is keyed, which takes into a bevil pinion (O) fixed on the end of a shaft (P), which is turned by a handle (R) at its extremity. By turning this handle (R) the bevil wheel (O) causes the shaft (L) and the pinions (M M) to revolve, the latter ascending or descending, according to the direction in which the handle (R) is made to revolve the toothed quadrants (I I), and causing the inner frame (G) to be raised, with its discs (B), rings (D), and cleaners (E), nearer to or further from the ground. The inner frame (H) and digging wheels (B) can be maintained in any desired position with relation to the travelling wheels by a "pawl" (S) taking into a ratchet wheel (T), cast on to one of the pinions (M M).

On proceeding to its work, the digging discs or wheels (B) are raised sufficiently by the means above-described, to keep the prongs from contact with the soil; and are kept in this position by the "pawl" (S) catching the ratchet wheel (T). On reaching the place to be dug, this pawl is thrown out, when the weight of the inner frame (G), with its digging discs (B), &c., will cause the pinions (M M) to run down the toothed quadrants (I I), and the digging prongs or forks (A) to enter the ground. The degree of penetration requisite is regulated by the handle (R), so as to depress the inner frame (G) less or more. The utmost extent of depression given is that which depresses the prongs up to the centre plates or discs; in this position the travelling wheels are lifted off the ground, and maintained by the pawl (S).

As the machine is dragged forward, the resistance offered by the earth in front of the prongs causes the latter to revolve, and portions of the soil to be detached, which are thrown back, after being lifted and broken up, by the action of the cleaning bars (E). As before-mentioned, a full-sized machine weighs nearly a ton, and breaks up to a depth not exceeding ten inches, a breadth of three feet at a time, equal to that of four ploughs, and equivalent to about five acres in seven hours. The price of the machine is £27 10s. The draught required varies with the nature of the soil from four to seven horses. A smaller implement is made for occupations where the horse-power is limited.

With reference to the cultivating capabilities of the machine, Mr. Samuelson, in a paper read before the British Association, remarked:—"I think it right to state that it possesses, in common with all other rotary implements hitherto made, or proposed, this disadvantage, as compared with the plough—that it does not completely invert the soil. I believe, however, that the occasions for such inversion are much more rare when we work with an instrument which leaves the ground broken, hollow, and mixed, like the digging machine, than with one which, like the plough, cleaves off a slice and exposes its superficies only to the air; there being, in fact, this essential distinction between the two machines—that one allows the air and water to descend; whereas, in the other, fresh soil must always be brought up, if it is to be acted upon by the elements."

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* Patent dated November 2nd, 1852, No. 621. Price of the specification, 9½d

THE GRADUAL DEVELOPMENT AND PERFECTION OF THE PLOUGH.

At the close of our last article, we proposed to glance at the peculiarities of a few of our leading implements, as exhibited at the meeting of the Royal Agricultural Society at Salisbury, and to investigate their principles of action; so as to deduce, if possible, some data which might lead us to trace the direction in which their further improvement might be made, or whether they are likely to be superseded by other mechanism better calculated to do their work.

As first in importance, and first undoubtedly in its claims to a high antiquity—the latter feature with some minds carrying with it no small influence—the plough demands our attention. Between the rude implement as figured in some Harleian MS. and the finished workmanship and scientific construction of a Howard, a Ransome, or a Busby's plough there is a wide interval. It carries us over, in fact, some hundreds of years. And while thinking over the weary periods, we scarce know at which to wonder most—that improvement has been so slow, or that it has always been made in the same beaten track; another implement to do the same work being seldom thought of. But of this more hereafter. Suffice it now to say, that from the minds of all men running constantly in the same groove, much might be, and no doubt is, argued in favour of this peculiar implement, as being the very best for the work to be done. We have said that there is a wide interval between a Saxon and a modern plough. Rude as the former was, it, however, contained the germ of the latter. Scoring or tearing a simple rut in the soil, its extreme simplicity of parts, with the gradual progress of agriculture, gave way to an arrangement of greater complexity and multiplication of details, but all carrying out the principle of action of which the simple plough with its "scoring" of the soil gave the rudiments or suggested the outline. This principle was inversion. Indeed, a simpler implement than even the Saxon plough would, in its action, serve to suggest this principle. The mere drawing of lines across the surface of the soil with a pointed stick would, with the displacement, show an inversion of some portions of the soil; the moving of the naked foot through loose soil or sand, &c., would still more clearly show the inversion with the displacement of the soil. Here, indeed, in the rising curved instep, we have an exemplification of what to a thinking man might have been the germ of the mould-board of the plough. Important inventions have taken their rise, before this, from as humble a suggestion. This principle being fairly established, by what steps, and by whom and where taken, the mould-board—the principal feature of the modern plough—was elaborated to the first veritable form, we have no means of ascertaining. There has always been a close connection between good draining and good ploughing; the results of the former have always thrown inducements in the way of the farmer to carry out to greater completeness the latter operation. Noting the landmarks of history, it seems probable that we owe that form of plough which contained all the essential parts of the plough now in use, to those mechanics and engineers who came over from Holland to conduct the draining of the English fens. Certain it is, at all events, that in Holland the plough took that form, and assumed the parts which peculiarly distinguish it now. In the Rotherham or Dutch plough, introduced into England about the beginning of the 18th century, we find the beam, the bridle, or "head" and the stilts or handles, the coulter, the sock or share, and the mould-board, all exemplified. These then being accepted as the essential features of the implement, the peculiar features also of the operation of which were deemed as essential to the cultivation of the soil, all that has followed since has been the perfecting in their details of workmanship or construction, on principles of more correct theory, the various parts, so that the grand principle of the implement might be as economically carried out as possible—namely, the complete inversion of the soil. The aim of our inventors in this department therefore has been simply the endeavour to make the clumsy and inefficient implements of a rude condition of agriculture, do a higher class of work with certainty and economy. How far the later improvers of the implement have succeded in effecting this economy of working, let the satisfactory practice of the last few years decide.

The Rotherham plough slowly worked its way into practice, but was little improved in its details; introduced at last into Scotland, it prompted a now well-known mechanic, James Small, to take it up, with a view to place its construction on a more accurate basis. His improvements resulted in giving the essential parts that decided character which has more or less influenced inventors from his period. To aid him in his practice came opportunely—the art of iron-founding. Up to this period the mould-board—now, perhaps, with the improved materials of its construction, more correctly termed the turn-furrow—was truly named; it in fact being made of boards, the sheathing only being of iron-plate. Working out a form of mould-board which he conceived best calculated to produce the best work, he was enabled by casting to multiply duplicates, thus securing the permanence of his form or the outline of turn-furrow, and placing it without the chances of misconstruction arising either from the ignorance or the wilfulness of the village mechanic, who under the old circumstances would have made it of wood. An impulse, and a widely-extended one, being thus given to the improvement of the established implement of culture, other inventors followed in the wake of Small, each advocating principles of construction—the mould-board being in all cases the grand feature to which attention was directed—more or less applicable to practice. But with improvements in principle those of construction also steadily advanced, and the clumsy heavy wooden framing gave place to that of the light, the strong, and the durable wrought-iron.

Up to a certain period that form of plough known as the swing was almost invariably used. The introduction of the wheeled plough, however, gave rise to a spirited—and not yet exhausted—controversy as to the comparative merits of the two implements, and instituted a marked distinction between the ploughs of England and the sister-country. The question in dispute may, we think, be compromised, if not settled, by a simple consideration to which we propose hereafter to refer.

The introduction of scientifically improved mouldboards, of the case-hardened sock (the celebrated invention of Robert Ransome), the iron body, and the light and durable framing, resulted in bringing the implement to a state of compartive perfection; and by the ease with which the various parts could be multiplied, all characterized by the same peculiarities of the original pattern, placing it in the hands of the practical farmer in a form which could be maintained in continual repair and in good working order at a small expenditure. The position which the plough now holds, and the peculiarities of its construction, will be best exemplified in a somewhat detailed description of a form which without ignoring the merits of those of other makers, may be taken as a type of the modern plough.

A LANDLORD ON TENANT-RIGHT.

"THE AGRICULTURAL QUESTION MAY BE SUMMED UP IN THREE EXPRESSIVE WORDS—SKILL, CAPITAL, AND SECURITY. TO ENSURE PROSPERITY, A FARMER MUST POSSESS SOME SKILL, JUDICIOUSLY APPLY HIS CAPITAL, AND HE HAS A RIGHT TO EXPECT SECURITY, EITHER IN LONG LEASES, OR IN COMPENSATION FOR UNEXHAUSTED IMPROVEMENTS." Let those two suggestive sentences stand out from the many speeches of the autumn. Rarely, indeed, is it, that we find so much good matter so closely packed, or so nicely adjusted. They come to us, moreover, upon the best authority. It is no new man who is talking in this way. No aspiring amateur who makes his bid for popularity and attention, with "skill, capital, and security." It is not even the tenant-farmer who is thus bold enough to strike out his own course, and claim his own rights. They are the landlords, after all, who are beginning to think and to speak like this. Not, let it be understood, the Manchester school of landlord, who naturally bring their commercial habits to bear upon everything they are engaged in. It is, on the contrary, "the Country Party," the old school of English gentlemen from whom these dicta emanate. It was with these very words that Sir John Pakington lately proceeded to address the members of the Worcestershire Agricultural Society.

It was, indeed, a fine theme, had the right honourable Baronet only thought fit to follow it out. As it is, the mere utterance of such sentiments "speaks volumes" for the landed proprietors of this kingdom. It is a fact that shows of itself how certainly a good principle is gradually extending, and beating down prejudice before it, in its triumphant course. It is not so many years since when a landowner was taught to look upon that same phrase "compensation for unexhausted improvement" as a kind of indefinite evil, he should be careful to keep at arm's length. As for the still more direct assertion of a tenant-right, that came to rank in something the same category as high treason, heresy, or wilful corruption of the people. We have known weak-minded men who have been positively so frightened out of their own opinions—who, after admitting and advocating the justice of the question, have quietly shrunk away from their own standard. The time was not come. The landowners would not submit to the exercise of such a right. Farmers must take care to make themselves safe by private agreement. The valuations differed so much in different localities. The thing, in fact, was impractical. The House of Commons would not have it. And so worthy men, who could go well enough with a winning cause, gradually withdrew from what they took to be a losing one.

But what is the fact? Let any one take these three "expressive words" of Sir John Pakington—SKILL, CAPITAL, and SECURITY—and ask himself one or two home-questions over them. Can any man for a moment suppose that skill and capital will go on doing all they should do, without that third great essential—security? In an age when we want even yet more skill and capital brought to bear upon the land, will it do for landlords to ignore the only terms upon which it can be honestly employed? Sir John maintains that, either by a lease or by compensation, we have a right to expect this. It is a well-known truth—we will not stay to consider how it is so—that a large majority of our tenant-farmers neither have leases, neither do they wish for them. No farmer yet, however, was known to refuse a compensation-clause in his agreement, or to do otherwise than uphold any "custom" which ensured him this. We must so arrive at the same end by whichever way may be the easier. The road here is clear enough; and it will only be idle to attempt to stop up a path by which our neighbours will travel.

Fairly started and closely discussed at the outset, this tenant-right claim has now for some time been left to depend on its own innate merits. It would be useless to deny that strong efforts were made in some quarters to give it "a bad name." People not originally consulted on, or not really acquainted with, its object, were at once for pooh-poohing it as a mere party-purpose cry, or something worse. Landowners, instructed by agents in whose offices Routine held sovereign sway, looked on it, as we have said, with prejudice and distrust. Fortunately, however, a good cause cannot be too much canvassed. And in this wise tenant-right had, at any rate, fair play. Beginning with the London one, the subject was debated over and over again at every Farmers' Club of any importance in the kingdom. Mr. Pusey, too, put it before them in the pages of the Royal Agricultural Society's Journal. The farmers spoke to it, one after another, before a Special Committee of the House of Commons. And all with this grand result. It never has, and perhaps never will, become the law of the land; but it is now to the country generally what it was once to a few favoured districts only—the Law of Custom.

These few terse sentences of Sir John Pakington are but the echo of what is passing in the minds of the great majority of our country gentlemen. If we could only see the alterations that have taken place within the last ten years in forms of leases and agreements, we should find how extended this just principle is becoming in its influence and action. Even if we do not see all these "modifications," we hear of them on every side. In simple fact, good farming could not go on without them. As it has been said, "the tenant-right cry is the surest sign of a spirit of improvement and advancement in the pursuits of agriculture that has yet been afforded us"; and call it what they may, people dare no longer disown it. It is the key-stone of Sir John's summing up. The exercise of skill, the application of capital, and the prosperity of the farmer must all rest upon some so secure a foundation.

Although little indeed has been said this season on agricultural subjects, we take what we have quoted of itself to imply a great deal. It shows how the pulse of the country is beating. It shows how much better and sounder, how much more business-like in a word, the feeling between landlord and tenant is becoming And more than this, at least to us, it shows that a principle with which the *Mark Lane Express* has been so long and especially associated is not a mistake. Through evil and good report, against the advice of many well-meaning, short-sighted friends, we have stood to our colours. We may wave them now in triumph over smiling corn-fields, or from the turrets of prospering homesteads. We would there were no graver battle-ground

RUTLAND PLOUGHING MEETING.

Successful as these meetings have hitherto been, under the management and untiring zeal of R. W. Baker, Esq., it was scarcely expected that the results of the meeting held at Uppingham on Tuesday, Oct. 6, would have been so highly satisfactory in every respect as they proved on that occasion, when we had the pleasure of witnessing the most spirited competition that has yet taken place in this district—or, indeed, in any other county—no less a number than 107 ploughs being entered from upwards of 30 parishes in Rutland, and the Champion Class prize being contended for by ploughmen from five counties. The Rutland Ploughing Meetings were commenced by Mr. Baker in 1828, and had for their object the improvement of the tillage of the land, of which good ploughing, we need scarcely observe, is the foundation. In 1834, having found the ploughs then in use of a very inferior description, and as such ploughs were ill adapted to the requirements of agricultural science, Mr. Baker suggested an improvement in that implement, and introduced the well-known "Rutland Plough," manufactured by Messrs. Ransome, of Ipswich; and we shall not be saying too much when we state that nearly every plough for general purposes brought before the public since that time has been, more or less, copied from this Rutland plough. Finding the meetings productive of such good results, Mr. Baker promised, if circumstances favoured him and his life were spared, to carry them on for 20 years: this promise he has most laudably accomplished, almost every year proving more and more, that the public appreciated his services for the general good. At the conclusion of the twentieth meeting, in 1847, having then fulfilled the promise alluded to, Mr. Baker resigned the task, twelve meetings having been held at Cottesmore, and eight others in various parts of the county. A very praiseworthy attempt was made by a committee to carry on these meetings, but that attempt failed; and in 1850 Mr. Baker was solicited to get up a meeting on the eastern side of the county; to this solicitation he readily and with good will responded, and the consequence was the largest meeting ever known was held at Casterton, where 133 ploughs competed for the various prizes. After a lapse of two years the tradesmen and other inhabitants of Uppingham came forward, and in 1852, with the assistance of several leading agriculturists in that neighbourhood, succeeded in raising funds for a very successful meeting, eighty-five ploughs being entered for competition. The inhabitants of Oakham next year followed the good example, and at that meeting, which took place in 1853, 103 ploughs were entered: on that occasion the agriculturists of Rutland had the opportunity of witnessing the operation of Samuelson's digging machine.

But it is time to return to the proceedings of Tuesday. The meeting was, as we have stated, a very successful one, and great credit is due to Mr. Baker and to the Uppingham committee for the satisfactory results. The weather was as fine as could have been desired, and the fields, where the different prizes were competed for, were thronged with evidently deeply interested spectators, the fineness of the weather tempting many parties from a distance to visit the spot. The absence of both the county members was noticed and commented upon. In the farmers' sons' class there were about twelve competitors; in the class for ploughmen, no less than about fifty; in the ploughboys' class, eighteen; and in the champion class, twenty-four. The land, which was generally of a light nature, was not in first-rate order; but the competitors, nevertheless, did their work exceedingly well, and the skill and anxiety each displayed were the subject of general remark and admiration. The work performed in the ploughboys' class was, as alluded to by Mr. Clarke at the dinner, "exceedingly meritorious." The sites selected were upon lands in Ridlington, offered by Mr. Burgess and Mr. Wortley; the ploughmen's work was performed upon land in the parish of Ayston.

The JUDGES were, for classes 1, 3, and 4—Breedon Everard, Esq., of Grooby; Wm. Rimell, Esq., of Camden; and John Algernon Clarke, Esq., of Long Sutton. For class 2.—B. Painter, Esq., of Carlton Curlieu, Liecestershire; Wm.

Parke, Esq., of Brant Broughton; and — Everitt, Esq., of Lyddington.

The following are their awards:

Class 1.—To the farmer's son, of Rutland, not in business for himself, who shall plough in the best manner half an acre of land within four hours, not less than 4½ inches deep, horses abreast, without a driver. First prize, a silver cup, value 10 sovs., to Mr. Arthur Hack, of Exton; second prize, a silver cup, value 5 sovs., to Mr. John Hammond, of Barrow. The ploughing of Mr. James Sharpe, of Ridlington, was commended. There were twelve entries in this class.

Class 2.—The ploughman of Rutland, ploughing half an acre of land, as in class 1. First prize, 5 sovs., to Thos. Dawson, with R. W. Baker, Esq., Cottesmore; second, 4 sovs., to Chas. Bryan, with Mr. Burgess, of Ridlington; third, 3 sovs., to Jas. Leeson, with John Christian, Esq., Barrow; fourth, 2 sovs., to John Symonds, with John Christian, Esq.; fifth, one sov., to Wm. Cross, with R. W. Baker, Esq.; sixth, 10s. to John Cross, with the Earl of Gainsborough. A silver medal was awarded in this class to R. W. Baker, Esq., as the owner of the first-prize plough. There were 53 entries.

Class 3.—To the ploughboy of Rutland, under 18 years of age, ploughing half an acre of land, as in class 2. First prize, 4 sovs. to Henry Bulley, with Mr. T. W. Fowler, Exton; second, 3 sovs., to Hy. Robinson, with Mr. J. Kew, of Market Overton; third, 2 sovs., to William Goodson, with Mrs. Rimmington, of Greetham; fourth, one sov., to James Perry, with George Savile, Esq., of Ingthorpe; fifth, 10s., to Charles Bell, with Mr. J. Linney, of Thistleton. The ploughing of John Gilford, with Mr. Bird, of Casterton, was highly commended; and that of Henry Clements, of Exton, was commended. Eighteen entries.

Class 4.—(Champion Class; open to all England).—To the farmer, farmer's son, ploughman, or ploughboy, ploughing the best half an acre of land, as in class 1. First prize, a silver cup (or money) value six guineas, to William Scott, with Lady de Clifford, of Kirkby, Leicestershire; second, a silver cup (or money) value three guineas, to Josiah Hibbitt, with Mr. James Hammond, of Barnsdale Lodge. A silver medal was awarded to the owner (Lady de Clifford) of the first prize-plough in this class. There were 24 entries.

Another great and important feature in the proceedings of Tuesday was the exhibition of the power of Fowler's steam plough, which was tried in a field upon Mr. Wortley's farm, at Ridlington. Very great interest was excited by this somewhat novel exhibition, which commenced about twelve o'clock, after the horse-ploughs had ceased working. Fowler's steam-plough was exhibited and worked at Salisbury, and was the most successful of any implement of the kind introduced at the Royal Show at that place: since then some alterations and improvements have been effected, and the trial on Tuesday proved satisfactory in every respect. The implement consists of two sets of ploughs (4 shares to each set), combined in a long frame which is balanced in the middle upon a pair of wheels, one set of ploughs being carried in the air while the other is in work, and the ploughman, riding upon the frame, steers the whole with accuracy by altering the lock of the wheels: the furrow-slices are shaken and pulverized by the rapidity with which they are turned over. The implement is hauled with a two-inch wire rope by an engine which shifts itself along the headland; one engine, and what is termed an "anchorage," at the opposite end of the field was employed; sometimes two engines, working one, or occasionally two implements, are employed, and by this plan a very much less quantity of rope is necessary: the engine employed on Tuesday carries the winding-drums beneath, supported upon a framing. The self-propulsion of the engine along the headland is easily accomplished. Mr. Fowler, who was on the ground, stated, in answer to enquiries made by several gentlemen, that the steam-plough was capable of ploughing, with an ordinary eight-horse power engine, 10 acres per day, and that it could, with the necessary additions, be employed as a plough, scarifier, or drill: the cost of the apparatus and engine would be about £750., also that it could be applied to any kind of lands, except rocky land, in which case he acknowledged there would be some difficulty; upon clay lands its action would be more beneficial than upon light soil. There was, certainly, but one opinion amongst the company, which included practical agriculturists, and that was, that the work performed was very creditable: it was indeed extraordinary to see a rather clumsy-looking implement sliding smoothly along the field at a speed of about 100 yards per minute, and turning up the ground with ease at a depth of nearly seven inches. There were about 600 persons present in the field; amongst this number we observed Lord and Lady Aveland, Stafford O'Brien, Esq., the Hon. Hy. Noel, General Fludyer, R. W. Baker, Esq., and Mrs. Baker, Jno. Eagleton, Esq., the Rev. Hy. Fludyer, Hy. Samson, Esq., Thos. Syson, Esq., Chas. Day, Esq., B. Ward, Esq., J. Hammond, Esq., &c. A charge of 1s. each was made for admission until two o'clock, at which time the ground was thrown open. All the visitors above-named also inspected and seemed interested in the competition for hand-ploughing.

In the same field with the steam apparatus was exhibited, by Mr. Baker, a very neat and compact pony-plough, the working of which was much admired: it is manufactured by Messrs. Ransome, and is very suitable for small patches of mangolds and other bulbs grown upon light soils.

It will be seen, from the above account, that the exhibition generally of Tuesday was a most remarkable one, embracing as it did ploughing in every form and stage, from the diminutive boy of twelve years of age and the pony plough, to the gigantic steam cultivator which has latterly created so much sensation in the agricultural world.

The Dinner, which took place at the Falcon Inn, Uppingham, was well served. A good supply of venison was presented by the Earl of Gainsborough and by Lord Aveland. About 140 gentlemen sat down, and had the room been larger there is no doubt but several others would have joined the company. Richard Westbrook Baker, Esq., presided; the vice-chair being occupied by Mr. Healy, of Uppingham: at a second table T. Brown, Esq., of Uppingham, presided, with T. Bryan, Esq., as vice. Mr. Baker was supported by the Hon. Henry Noel, R. and A. Ransome, Esqrs., Captain Knight, Captain Rooper, W. Shield, Esq., —. Renall, Esq., J. Burgess, Esq., W. and G. Baker, Esqrs., the judges, &c. Grace was said by the Rev. E. Thring, head-master of the Uppingham grammar-school.

On the removal of the cloths,

The Chairman gave, with a suitable preface, "The Queen;" the toast being drunk right loyally, with three times three.—"The Prince Consort, Albert Prince of Wales, and the rest of the Royal Family," was also given from the chair, and received with applause.

The Chairman again rose, and said he had now a toast to propose which he was sure would be received by all present with a great deal of pleasure. It was twenty-nine years since these ploughing meetings were established. They were begun in a very humble manner; but they grew year after year, and he was sure a more successful meeting than this had never been held during the whole twenty-nine years. (Cheers.) Upon this occasion an extraordinary degree of effort and great ability had been called into action. He had been assisted by a very able committee from one end of the county to the other; everything had been done that was possible; and the result was one of the finest and best meetings he ever saw. (Cheers.) They had endeavoured to encourage the ploughboy, the ploughman, and the farmer's son, preparatory to his becoming a farmer and one of themselves. In round numbers, they had awarded in premiums, during the twenty-nine years, something like £1,100, and about 1,500 ploughs had been brought out for public competition, to say nothing of private trials of skill which had taken place in almost every parish; neighbour against neighbour in happy rivalry. Last week he witnessed no fewer than seven such private trials, and those were as good as some of their ploughing meetings when first originated. (Hear, and cheers.) At the outset they could scarcely get half-a-score subscribers, whereas on this occasion they had nearly a hundred, distributed over the whole county. The number of ploughs, too, brought together on that day, had exceeded that of any former meeting. Therefore, with these facts in view, and considering that the ploughs had been brought from upwards of thirty villages, the affair seemed to have excited a very general interest. (Hear, hear.) They had been favoured with a very fine day, and nothing could have been more pleasant for all parties. The steam-plough he had left out of the question, for that, he understood, could work in all weathers. (Laughter and cheers.) He hoped that in the course of the evening they should have some very interesting remarks upon steam and its application to the cultivation of the soil. Before concluding, he might mention that no less than five counties had contended for the champion prizes, and that twenty-one ploughs came into competition. He took an opportunity in the earlier part of the day of noticing whether there was competition amongst plough-makers, and he found that the twenty-one ploughs were produced by no less than nine makers, viz.:—Duncombe, 1; Chamberlain, 3; Freer, 6; Downes, 4; Bird, 1; Bailey, 2; Pearson, 2; Goulding and Co., 1; Tarlton, 1. The Chairman concluded by proposing "Prosperity to the Rutland Ploughing Meeting." (Drunk with loud applause.)

The CHAIRMAN then read the list of prizes as above.

The silver cups were then presented to Mr. Arthur Hack and Mr. Wm. Scott, by J. Brown, Esq., who addressed a few appropriate remarks to each. The other prizes were also distributed, the winners being warmly cheered. In reply to the Chairman, Scott said he had gained prizes to the amount of about £100 at the Rutland ploughing meetings, and Hibbit said he had won upwards of £40. The Chairman passed a high encomium upon the character of Scott, who, in reply, stated that although he had not lived in Rutland for the last thirteen years, yet he was born in the county, and learnt to plough there (cheers.)

The CHAIRMAN informed the meeting that Messrs. Goulding and Co., of Leicester, made the plough used by Scott, and Mr. Bailey, of Casterton, that used by Hibbit. Bell, whose work was commended, used a plough made by Mr. Chamberlain.

In reply to a question, the Chairman said that Scott did not bring horses with him, but that he borrowed a pair which he had never seen till he took them in hand that morning (Applause).

The Hon. H. NOEL was entrusted with the next toast, "The Health of the Judges in Classes 2, 3, and 4—Mr. Everard, Mr. Rimell, and Mr. John Algernon Clarke" (cheers).

Mr. JOHN ALGERNON CLARKE responded. He remarked that they had had a fine day, land in good order, admirable ploughing, a large assembly out of doors, pleasant company within, and a very satisfactory dinner (cheers). He hoped they would remember that the great success of this ploughman's festival was mainly owing to the exertions and energy of their friend Mr. Baker, who on this occasion seemed to have fully acted up to the motto of his family, *Non sibi, sed patria* (cheers). He (Mr. Clarke) had that day been reminded of the time when ploughing matches, however interesting and pleasant they might be, would be perhaps altogether forgotten, or at any rate numbered with the things that were. They had been brought face to face with the possibility and the actual realized practicability of tillage by steam power. Now they were all prepared for steam power. A few years ago, the mere mention of such a thing would have been met with scorn and ridicule. Now, however, it was met with nothing of the kind, but with a great deal of scrutiny and judgment on the part of practical men; and, he said, they not only wanted it, but they were prepared for it (cheers). How many there were who had portable engines, with men on their farms who understood how to run and drive an engine! In the parish he came from there were ten, in the next parish five, and in the next to that four, each of them having one or two men going out with it, who understood how to drive an engine, and how to pack a piston rod, and do other little matters of that sort. It would be seen that instead of common ploughboys and agricultural labourers of a common sort, they were beginning to have men as engineers or semi-engineers; and, as he said, they were prepared for the adoption of steam culture (cheers). After briefly glancing at one or two of the various schemes which have from time to time been propounded for ploughing by steam, the speaker said that as many of them had portable engines, it was very desirable that they should be able to employ them in working cultivators of some kind, to perform not merely the lighter operations of agriculture, but the fundamental work of the agriculturist—that was, ploughing. Now Mr. Fowler, an engineer of the right sort—he hoped he was in the room—was a man, he believed, endowed with the true daring and courage of genius; and who, when backed by such a firm as that of the Messrs. Ransome, would be deterred by no difficulty. Mr. Fowler had informed him (Mr. John Algernon Clarke) that very day that he had brought out an apparatus, the cost of which was about £250, to be worked by a common portable engine. That was the sort of thing they wanted. With that machine he understood they could not only plough, but, by attaching scarifying tines, they could thoroughly pulverize the soil (cheers). He (Mr. Clarke) did not know that he had anything to say with regard to the details of steam culture; he would leave it to Mr. Fowler and other gentlemen conversant with the subject, to give them the prices at which they could cultivate the soil, and to describe the superior effects which might be expected to follow from their mode of culture as compared with the old system of ploughing. He might, however, remark that though the champion ploughing might look very light and beautiful, yet it was not always such as was best for the farmer; and when they looked at the steam ploughing that day, and saw the rapidity of the motion, the depth of the furrows, and the admirable way in which the soil was pulverized, they would see that in calculating expenses they must allow for the superior order of the work (cheers). With regard to the decisions of the judges, they very much admired nearly all the ploughing, and he thought their especial admiration was drawn forth by the boys. He never saw such ploughing, and he should think it must be altogether unexampled, even at the Rutland meetings (loud cheers).

Mr. MORRIS (Luffenham) proposed "The health of the judges of the second class—Mr. Painter, Mr. Pack, and Mr. Everett" (cheers).

Mr. Painter returned thanks, stating that in 1841, he, as a farmer's son, took the first cup given by the Earl of Gainsborough (cheers).

Mr. Shield proposed "The Committee of Management," coupling with the toast the name of Mr. Law, who responded.

Glee—"Fill the shining Goblet."

Mr. Wortley, in highly complimentary terms, gave the health of that distinguished friend of British agriculture, "Mr. Fowler," with thanks to him for the exhibition of his steam plough. The toast was drunk with great enthusiasm.

The Chairman said he was sorry to announce that Mr. Fowler was not present. He had to pack up his machinery and leave for Lancashire. The Chairman then proposed "The Plough-makers," mentioning a plough made by Messrs. Ransome, which had attracted considerable notice from its being drawn by a pony.

Mr. A. Ransome (who was received with loud applause) responded at some length. His grandfather, he believed, was one of the earliest to turn his attention to improving the construction of the plough, to simplifying the details, and to making its parts of such a character as that the farmer might keep them in his own granary, and put them together without the trouble of carrying them to the blacksmith. That was now half a century ago (cheers). It was in the recollection of their worthy friend the President that something like thirty years ago the first idea was begotten for the establishment of this association. He (Mr. R.) was present when the idea was mooted, and for many years he had the pleasure of occasionally meeting his agricultural friends on these occasions. He also attended the twentieth anniversary; and he thought he had a right to claim some close connection with their association, when he could show that he assisted to nurse it in its cradle, and at that time as was supposed followed it to its grave. He, however, was happy to find that, like the phœnix, it had risen from its ashes, and grown stronger with its years; and now, if they understood its value, notwithstanding all the steam ploughs that might ever be invented, they would remain a society as long as agriculture had any part in the plough, or the plough any part in agriculture (loud cheers). In the allusion which had been made to the steam plough, he was glad to have an opportunity on behalf of his absent friend, Mr. Fowler, to say how deeply gratified that gentleman would feel that his exertions in that direction had been so kindly and so thoroughly appreciated. He (Mr. Ransome) was sure that every one who had watched Mr. Fowler's struggles in endeavouring to bring forward the steam plough, must feel convinced that he had been and was a great benefactor to agriculture (cheers). Mr. Ransome proceeded to trace the progress of invention in the application of steam to the purpose of agriculture from the middle of the last century to the present time, describing the chief machines which had been invented, and the difficulties the inventors had experienced. He said they had now before them three schemes, into which all the various notions put forward at different times relative to steam ploughing had resolved themselves, the first being that which should drag the implement through the land by means of a traction rope; the second, passing over the land, and containing in itself an instrument to turn up and pulverize the soil; and the third, that of Mr. Boydell, dragging the plough behind it. He (Mr. Ransome) was glad to find that after we had witnessed jealousies of all sorts in connection with the progress of invention, these three plans had fallen into the hands of three men in whose composition jealousy formed no part; Mr. Crosskill advocating one, Mr. Boydell another, and Mr. Fowler being not a whit behind another; and all these were endeavouring each, without prejudice to the other, to maintain that which they believed best. He (Mr. Ransome) had always said that however good the other schemes might be, the best was that of Mr. Fowler, and such he still believed to be the fact. He did not by any means say that the others might not ultimately be better; but this he did say, that Mr. Fowler's plough was more nearly within their grasp (cheers). In bringing before them the steam plough on that occasion, he wished it to be understood that they did not come in any spirit of rivalry to the hand plough. It was not to be supposed that the former would entirely supersede the latter invention, any more than the invention of printing would supersede the art of writing. They might depend upon it that as long as English land had to be cultivated, English hands would be needed over a very great portion of it; and they would, therefore, do wisely by endeavouring to perfect the instrument that could be so used (cheers) Mr. Ransome concluded an energetic and effective speech by proposing the health of the chairman, Mr. Baker, whom, he was sure, they would be delighted at all times to honour (cheers).

The Chairman, in reply, expressed the pleasure he had derived from endeavouring to promote improvements in the agriculture of the county of Rutland, and referred to the objections which were raised when he first pointed out the possibility of ploughing with two horses instead of three or four. He did not expect to live long enough to see horses superseded by steam to any great extent in agricultural operations, but he did anticipate the time when the use of portable steam engines would become more general, and when they would travel from one farm to another without horses. The Chairman concluded by proposing "Prosperity to the Town and Trade of Uppingham," coupling with the toast the name of Mr. Healy (cheers).

Mr. Healy responded in a brief but humorous speech, in the course of which he remarked that they had been told that Rutland was the "dark county;" but if there was any darkness on that occasion, it was because the great county gentry had not come forward to shed upon them the sunshine of their presence (laughter and cheers).

The Rev. E. Thring proposed the last toast on the list, "The President of the Rutland Agricultural Society, the Earl of Gainsborough." In the course of an address of some length, the rev. gentleman dwelt upon the importance of training and educating servants for the work they had to perform, and expressed the pleasure it afforded him to find that it would go forth to the world that the farmers of Rutland welcomed the steam plough instead of sneering at it (cheers).

The Hon. H. Noel returned thanks on behalf of the noble Earl, his father.

Thus terminated a highly successful meeting.

PROFITS REALIZED BY THE EXPORTATION OF BREEDING STOCK TO THE UNITED STATES.—A short time since we noticed the shipment of a number of breeding animals for Illinois, in the United States. The stock referred to consisted, as we then stated, of 82 animals, which had been selected with great care and skill, and purchased at large prices, by three gentlemen who came over from the State in question for the purpose. These gentlemen, Dr. Johns, Mr. Jacoby, and Mr. Brown, traversed England, Ireland, and Scotland, in quest of stock suitable for their object; and these they purchased, wherever met with, without restriction as to price. The result was a purchase of eighty-two animals in all, viz., two entire horses one thorough-bred, and a thorough-bred brood mare, nine bulls, twenty-one cows and heifers, twenty-five sheep, and twenty-four pigs, all of which were consigned to Mr. Bell, of the Adelphi stables, who shipped them on board the "Georgia," for Philadelphia. Every precaution which skill and experience could suggest was adopted with regard to fitting up and ventilating the ship, and also for the feeding and care of the animals on the long voyage which was before them, rendered in some degree perilous by the comparatively warm climate to which they were destined. The precautions indispensable for this purpose were necessarily very costly, as was the quantity of provisions requisite for so long a voyage. The expenses of travelling and conveyance, added to the first cost of the animals, amounted in all to 32,767 dols.; notwithstanding which, and the occurrence of some mortality among the animals, the investment has turned out a very profitable one, the whole lot having realized 43,520 dol. Mention has been made of some mortality among these fine animals; this consisted of the death of the brood mare, 1 bull, 1 cow, 1 sheep, and 1 pig, which died on the voyage, and 1 bull, which died from the effects of heat in Philadelphia. From the *Illinois Chronicle*, of the 3rd instant, we learn some particulars of the sale; these are as follow:—"Young Barton," thorough-bred stallion, which cost, including conveyance, 2,200 dols., sold for 5,050 dols. Among the bulls, "Defender," which cost 1,100 dols., sold for 2,500 dols.; "Argus," which cost 1,066 dols., sold for 2,058 dols.; "Admiral," which cost 1,201 dols., sold for 2,000 dols.; and "King Alfred," which cost 1,100 dols., sold for 1,300 dols. Among the cows and heifers "Rachel," which cost 1,766 dols., brought 3,925 dols.; "Emerald," which cost 1,204 dols., brought 2,125 dols.; and "Lady Harriet," which cost 916 dols., brought 1,300 dols. The Cotswold rams cost 554 dols., the ewes 720 dols.; [the Southdown rams cost 578 dols., the ewes 590 dols.:] for the Berkshire boars the cost was 398 dols., and for the sows 347 dols. For the Irish, Cumberland and Yorkshire boars the cost was 251 dollars, and for the sows 360 dollars. From a comparison of the original cost, including all expenses, which the full amount realized, it appears that a profit of nearly 33 per cent. has accrued from the speculation, after deducting all costs and casualties. The only class of stock on which money was lost was the sheep, the highest amount of aggregate profit being on the pigs; but so satisfactory has the speculation turned out, that other gentlemen have intimated their intention of coming over here in the spring for the purpose of making similar purchases. Indeed, to such an extent is the purchase and transmission of breeding stock from this country now carried, that it has become an important item in the export trade of Liverpool. In this statement we are borne out partly by the facts already stated, and partly also by the circumstance that Mr. Bell is at present engaged in collecting and forwarding stock to Australia, Callao, Pernambucco, Buenos Ayres, Canada, and the United States. The animals now referred to consist of stud-horses, blood brood-mares, bulls, cows, sheep, donkeys, pigs, and poultry.

SKETCHES OF BRITISH INDIA.

From the Parliamentary Report on Indian Territories, published in 1852, it appears that the total area of British India covers 1,368,113 square miles. Of this territory the British States contain 677,752 square miles, with a population of 99,409,902; while the Native States include 690,361 square miles, with a population of 52,359,051. Prior to the existing mutiny, the military armaments of all India numbered 726,758 men, of which 435,229 were in the service of the native princes. This magnificent country is rich in natural productions. It is watered by numerous rivers, while its coasts are washed by the ocean from Bombay to Cape Comorin, and from Cape Comorin to Calcutta. The fertile soil yields coffee and sugar, wheat and barley, indigo and tobacco, cotton and opium, rice and various spices. The juice of the mulberry is there converted into silk by the curious progress of one of the most wonderful of insects; and the fleece of the sheep supplies the natives with wool. Medicinal herbs abound. Hemp grows wild in the north-western provinces and in the Himalaya. Large forests furnish wood for useful and ornamental purposes. The ship-yards of Bombay are supplied with teak from the coast of Malabar. The bamboo is used for the construction of houses and bridges. Mahogany was only planted in 1795; but now it is only inferior to the finest qualities of Honduras. Maple, logwood, oak, fir, the horse-chesnut, and almost all the European fruit-trees flourish; while the mango and the tamarind are ranged in groves. India yields coal and iron; and the famous Damascus blades, once so highly prized by the warrior, are known to have been manufactured in the north-west of Hindostan; and even in our days, the wootz steel is imported into England, for the manufacture of surgical instruments. The country can supply nitre for the whole world. Precious stones—agates and jaspers, pearls and diamonds—add to the wealth of the peninsula. Before the machinery of Lancashire destroyed the hand-loom weavers of India, they furnished the most beautiful fabrics to Europe; and did so even in the time of Augustus Cæsar. Their muslins were so delicate as to have received the distinctive titles of "running water" and "nightly dew;" and we may judge of their fineness and tenuity from the fact that a Persian ambassador, on his return from India, presented his king with a cocoa-nut, which contained a muslin turban thirty yards long, and which, when expanded in the air, could hardly be felt. The carving of Indian wood-work, the patterns, colours, and texture of its shawls and scarves, admired for centuries, astonished and delighted all who visited the Great Exhibition in Hyde-park, in 1851.

From the earliest periods the Hindoos excelled in architecture, displayed in their temples and tombs, and it may be read almost with incredulity that the Hills of Western India, over the space of five thousand square miles, are penetrated by hundreds of caves, hewn out of the solid rock without the aid of gunpowder, and covered with rich and elaborate sculptures, which in size and beauty rival the finest cathedrals in Europe. The mountain of Aboo, 5,000 feet high, is covered with a vast mass of temples, constructed in the seventh century of the Christian era. According to Dr. Buist, the hills of Paulitana are literally crusted over with temples of the finest arabesque, cut in the hardest stone. The ruined city of Beejapoor contained sixteen hundred mosques. The dome of the Mausoleum of Ibrahim Adil Shah is a third larger than that of St. Paul's; the mosque to which it belongs is 450 feet in length and 150 in breadth; while the Taj-Mahal of Agra, the monument erected by the Emperor Jehangeer over his wife, the "light of the Harem," built of the purest white marble, and inlaid with the richest mosaic, stands unrivalled among the mausoleums of the world. These ingenious people were expert in the manufacture of warlike weapons. We have alluded to their sword blades, so admirably tempered, and so highly valued by Saracen and Christian knights. The damask rifles are beautiful, and there are cannon at Moorshedabad, Dacia, and Agra of prodigious dimensions. That at Agra is a brass fifteen-hundred pounder, of twenty-three inches' bore. In astronomy they were well versed; for the Brahmins studied the stars and calculated eclipses, and their equatorial instruments were so colossal in size as to allow above three inches and a-half to a degree, each degree being divided into minutes; the gnomons of the sun dials were from a hundred to a hundred and twenty feet in length. These facts alone refute the popular error, that the natives are a semi-barbarous people.

The division into CASTES has a powerful influence on the social condition of Hindostan. According to the sacred books of the Hindoos, there are four orders or castes, the Brahmin, the Cshatriayas, the Vaisyas, and the Sudras. The first proceeded from the mouth of Brahma, the second from his right arm, the third from his right thigh, and the fourth from the soles of his feet. The Brahmin is of the priesthood, and Cshatriayas is the soldier; under the term Vaisyas are comprehended the trading-classes and the husbandmen, while the Sudras are the labourers. This classification is hereditary. It is recorded in the code of Menu, written about 1,500 years before the birth of Christ, and from that time to the present its regulations have never been infringed.

From time immemorial Hindostan has been in a special degree an agricultural country. The soil yielded the great bulk of the revenue, both under the Hindoo and Mahomedan princes, and to this day three-fourths of the public income received by the East India Company is derived from the same source. Under the native sovereigns the superintendence of aqueducts, reservoirs, and canals, applied to the purposes of irrigation, was placed under a special department of the Government. The cultivators gladly paid a water-rate which ensured them copious harvests in the torrid regions of the sun, and the tolls raised on a single canal are said to have paid for the maintenance of twelve thousand horsemen. Of the magnitude of these public works some idea may be formed from the fact, well recorded, that the Emperor Feroze constructed, about the year 1350, a magnificent canal, for the purposes of irrigation, from the base of the mountains to the neighbourhood of Delhi, two hundred miles in length, by means of which a vast tract of country was made fertile as a garden, and above a million of people provided with food. And yet nothing is more true than that the rulers of ancient India never held in proprietary right a single rood of ground, for the whole belonged to the cultivators, there called Ryots. According to the institutes of Menu, the legislator of the Hindoos, who flourished fifteen years before the christian era, "Cultivated land is the property of him who cut away the wood, and who cleared or tilled it." The right to ownership of the soil is emphatically described in the old laws "as the grass which cannot be eradicated;" and tradition records the ancient adage, "The Government is owner of the rent, but I am master of the land." Nor was there anything arbitrary or uncertain in estimating the rent; it amounted to one-sixth of the crop in time of peace, and to one-fourth in time of war; this scale was fixed in the code of Menu, and thus deemed sacred and immutable by all classes. Such was the general rule; but there were some slight variatutes which however were based on equity. In the Institions, of Menu are these passages: "Let the king oblige traders to pay taxes on their saleable commodities; of grain an eighth part, a sixth, or a twelfth, according to the difference of the soil and the labour necessary to cultivate it." Again: "A military king who takes even a fourth-part of the crops of his realm at a time of urgent necessity, as of war or invasion, and protects his people to the utmost of his power, commits no sin;" and in another passage it is written: "The tax on the mercantile class, which in times of prosperity must be only a twelfth-part of their crops, may be an eighth, or a sixth, which is a medium, or even a fourth, in great public adversity." It is also stated in the law treatise called the 'Ayeen Akbery:' "In former times the monarchs or rajahs of Hindostan only exacted one-sixth of the produce from the cultivators."

When the Mogul conqueror Timour subdued Hindostan he did not change this system, nor did his descendants till the decline of the empire which he had founded. Timour, in his Institutes, was only anxious that all available soil should be cultivated. "All deserted lands," so commanded that prince, "if there be no owners to them, "shall be annexed to the fisc (crown-lands); and if there be owners, and those owners are reduced to distress, let the necessary supplies be granted to them, that they may cultivate the lands." We might look in vain for the same generous spirit in modern Europe. These crown-lands, be it observed, were only under the guardianship of the throne, for neither kings nor emperors had any possessory title to them; and this is plain, from the following doctrines, propounded by the Mahomedan jurists: "The land of Irak is the property of the inhabitants. They may alienate it by sale, and dispose of it as they please; for, when the Imaum conquers a country by force of arms, and if he permit the inhabitants to remain on it, imposing the kheraj (a tax on infidels) on their lands, and the juzzea (a capitation tax) on their heads, the land is the property of the inhabitants; and since it is their property, it is lawful for them to sell it and dispose of it as they choose." The law treatise (the Hedaya) declares, that whosoever cultivates waste-lands does thereby acquire the property of them. And a conquered infidel, under the conditions just named, had the same privilege.

One of the earliest acts of the first King of Cashmere, in the year A.D. 1326, was to confirm for ever the ancient land-tax, which amounted to 17 per cent., or about one-sixth of the whole produce of the soil. It appears, then, that the full possessory right and title to the land were vested in the cultivator; and so long as he paid the rent he never could be ejected: it was the inheritance of his children. There were no leases; and what we call tenant-right never entered into the minds of the people. But there was one exception to this rule, though the exception was just. It was the national interest that every acre should be cultivated; for if one man had been allowed with impunity to neglect that duty, all might have done so, when the people would have suffered from want of food, and the king would have lost his revenue; therefore to this tenure was attached the condition of forfeiture as a proper punishment on idleness. This was, however, rather a precautionary than a punitive measure, and we may reasonably presume that the law was very rarely enforced. No man had to pay any fee for enclosing wastes or commons; indeed, this was encouraged by the Government, who never began to levy the tax till the cultivator had recovered any outlay of time or money that he had incurred in clearing, levelling, or other preliminary operations.

These Indian farmers, if we may so call them, had another most important advantage; they were only bound to pay their land-tax or rent in kind, unless they voluntarily made an agreement to commute it into money—which bears a close relation to our former system of tithe-gathering. When the seasons were unfavourable to him, they were equally unfavourable to the imperial treasury; and it is probable that this circumstance led to the system of irrigation to which we have referred, which secured the country against famine, so far as human prudence could guard against such a calamity. The whole system was eminently wise, and so long as it was preserved in its original integrity, the country flourished; and few princes have bestowed greater happiness on his people than the illustrious Akbar, who ascended the throne of Delhi A.D. 1545. It was the very reverse of European feudalism, which recognized the king as sole landed proprietor, and led to that vast train of vexatious consequences which jurists have denominated the feudal "incidents"; but the benefits of Hindoo tenure will be more highly appreciated when we describe, as we propose to do in our next article, the system of tillage communities or municipalities, on which the entire polity of ancient India was founded.

STABLE MANURES—THEIR TREATMENT, &c.

The war among agricultural writers still continues, and we find parties in favour of fermenting their manures without additional moisture. Some persons are in favour of ploughing the manures into the soil in their long and unfermented state; others prefer partial decomposition; others to reduce it all to the fluid form before use; and some believe that they may spread it over the surface of the ground, and leave it for weeks without its losing any part of its value; others believe that its chief value consists in its ammoniacal portions, and nurse these with great care, while others seem to be willing to carry on its fermentation in the dry state, until entirely fire-fanged, and thus to possess nothing but the inorganic portions, which are precisely equivalent to the ash which would be left, were it all burned before use. All these systems have advocates, and so great seems to be the fear of English chemists, that even in replying to questions put to them at their lectures, they are afraid to fearlessly advocate the truths which their lectures have previously set forth, and which have given rise to the questions asked. Now the simple truth is this: Barn-yard manure contains both organic and inorganic constituents, and no plant can make use of either of these until found in solution in water; and if any plan can be devised by which both organic and inorganic constituents may be delivered to the plant in a fluid form, that is the plan which should be adopted, and the only question for the farmer to ask himself is, Can I get the whole of these constituents in solution, or must a part of them be lost by the process? and if the whole, can it be done at so light an expense as to render the mode practical as well as practicable? That it is practicable, we all know—where manure sheds are properly arranged, and the necessary facilities exist for a supply of water, with economical means to carry this water, laden with the constituents of the manure, to the field, without large cost; then the most economical method would be to convert all the manure to the fluid form before its use. This plan calls for a drainage cistern at the foot of the heap, supplied with a pump to be moved by a windmill, and an easy supply of water to replace the portions taken away. It also calls for a moderate portion of sulphuric acid, so as to fix the ammonia in the form of sulphate of ammonia, which is a non-volatile compound.

Under such an arrangement the dung-heap would always remain at a proper degree of humidity, for the more rapid decomposition of the manure without the loss of ammonia; and by the aid of liquid-manure carts, distributing pipes, &c., the contents of the cistern could be continually disposed of, for the use of crops, thus presenting all kinds of manure in the best form for appropriation by plants; for the chemical conditions of the heap would at all times be such as to insure such chemical changes of the constituents as are necessary to render them soluble. The moisture exuding from the heap to the cistern should be continually thrown back to its top, and thus every particle in the mass would in turn come in contact with the soluble portions of every other part of the heap. No turning of the compost would be necessary; decomposable matters of every kind could be continually thrown upon it, and the fluid wastage of the stables, &c., might be conveyed to the cistern.

Whenever the fermentation should be such as to liberate ammonia, a small quantity of sulphuric acid added to the contents of the cistern would find its way through the mass by means of the pump, and thus change all the free ammonia to sulphate, which, although soluble, is not volatile. If the conditions referred to be complied with, the whole manurial product of a farm may be presented to the crops in a soluble shape; for it is a mere question of time to reduce even the dryest parts of the straw to the fluid form. It is well known that the same amount of manurial matter in solution will produce a greater amount of vegetable return than when applied in the solid form. This is a fact that no theory not founded on precise truth can interfere with; but it is not a fact that every farmer is so positioned as to supply all the conditions called for in the foregoing. Those who have soils fully charged with clay and carbonaceous matter, may bury long manures in the fall with profit, leaving them to undergo decomposition in a soil capable of receiving and retaining the resulting gases from the decomposition of the organic portions, while the moisture in such soils, particularly those of an aluminous character, will, during fall, winter, and spring, disseminate the portions rendered soluble throughout the mass in degree, but not so perfectly as when applied in a dilute state after being rendered soluble; nor will such treatment produce the same amount of manure applied in the liquid form.

Partial decomposition in the manure sheds, without the use of water, must always be attended with partial loss from the escape of ammonia, and from the inorganic portions being reduced to the ash state by fire-fanging, without having undergone the necessary chemical changes to render them in new proximate forms as ready and immediate pabulum for plants. In very wet soils manure so prepared will part with ammonia without its being absorbed by the soil; for close observation will detect a continuous escape of ammoniacal gases from the surface of a heavily-manured shallow-ploughed wet soil.

Those who imagine they find good results from the spreading of manure on the surface, and leaving it for days, weeks, or months, before it is ploughed under, mistake the action of the litter or longer portions of the manure as a mulch for the action of the manure on the soil. A coating of carpenter's shavings or salt hay, applied as a mulch, will do the same; and when the manure is so used, the bile and chyle of the animal, with all the nitrogenous portions, as fast as they assume a gaseous form, escape into the atmosphere, and the mulch-like action is, in error, supposed to arise from these lost portions being carried into the soil by rains, dews, &c.

Those who argue that small heaps of manure undergo no loss during winter, forget that they cannot tell when one season leaves off and another begins, relatively to the amount of heat in the centre of these heaps. Under certain states of the humidity of the atmosphere in winter, and sudden and unusual changes of temperature, partial decomposition does take place and loss of ammonia does occur. During rains the more soluble portions are washed into the soil, instead of remaining in contact with the straw or litter to insure the necessary chemical changes. These portions so washed out at least lose a large part, if not the whole, of their free ammonia. Place a bottle of smelling salts in a freezing mixture, and find the temperature, if you can, at which it will cease to be in degree volatile; and if this degree could be ascertained, and it should be found to be one or two degrees above the freezing point of water, still a higher temperature than this, and one at which it would escape, would exist whenever it rains or whenever a dew is observable.

When manure-sheds cannot be supplied with the necessary arrangements, such as we have already noted, their contents may at least be kept in that state of humidity that will permit decomposition with a small loss of ammonia to go on. They may be supplied with water containing minute quantities of sulphate of ammonia, whenever a paper wet with muriatic acid held above them shall show that ammonia is escaping. To such heaps may be added charcoal dust, decomposed swamp muck, head-lands, and such other inert materials as are capable of retaining ammonia when generated and given off by the mass; it should be remembered that a single cord from the bottom of this heap may sometimes be worth five cords taken at its top, and unless the admixture be perfect at the time of removal no correct calculations can be made on the value per load. It should also be remembered that the liquid manure of three animals is worth the solid excrement of four; and, therefore, the fluid portions from his stable should receive his care, so that he need not depend upon their being absorbed by the bed of the animals.

Those who advocate the box-feeding need not exercise any great stretch of imagination to comprehend that the fluid excreta represents in degree the pump and drainage system. Every time the animal voids its urine it passes it into the manure on which it is compelled to stand, before the chemical changes take place which liberate the nitrogenous portions, and it is only to this extent that the box-feeding has an advantage over some other plan in rendering the manure more valuable. If all the solid and fluid excretæ should find their way to a well-regulated manure shed, the manure would be of more value than from the system of box-feeding, while the health of the animal would be much better than when compelled to stand constantly in the effluvia of its own dung.—*Working Farmer.*

THE RESULTS OF THE HARVEST, AND THE PROSPECTS OF THE CORN TRADE.

Having allowed a sufficient time to elapse after the conclusion of the harvest to be able to form an opinion as to the general results, we propose now to consider what may be the course that the grain trade, and especially that in wheat, is likely to take in the season that has now commenced. Many circumstances have occurred of sufficient importance to affect materially the supply, and consequently the price of corn in the United Kingdom. It is therefore desirable to ascertain as far as possible the present condition of the country as regards the prospect of obtaining a sufficient quantity of bread-corn to meet the consumption.

It is admitted on all hands that, taking the whole kingdom, the crop of wheat just harvested is a full average one, and probably rather more. The drawbacks occasioned by the violent and extensive storms in the north of England and Scotland, and also in some of the midland counties, are considerable. But we look upon the loss sustained by these casualties as more than made up by the extraordinarily large produce in other parts, especially those districts where high farming is practised. The accounts given from week to week in this journal, by our country correspondents, from different counties, will enable our readers to judge how far we are correct in this opinion—which, in the main, will be found consistent with the facts adduced in those reports.

By the Board of Trade returns, we find that during the six years from 1851 to 1856 inclusive, we have imported of wheat, and flour as wheat, 28,622,873 qrs.—

or an average of 4,770,410 qrs. per year. With an average crop, therefore, we shall still want an imported amount of nearly five million quarters; especially when we take into account the loss of the potato crop, which we fear is too well established to admit of a doubt. The last three weeks, indeed, the disease has assumed a virulence equal in destructiveness to that of the worst period of its prevalence; and this extends not only to every part of the United Kingdom, but to France, and a considerable part of the European continent. In France, the alarm created by it has led the Government of that country to prohibit the export of grain until September, 1858. The extent, indeed, to which that root is cultivated there (from 2½ to 3 million acres), renders the loss a serious national calamity, as it forms the chief food of the peasantry—as was the case in Ireland previous to the famine. Notwithstanding, therefore, that the crop of wheat in France is above an average, the loss of the potato, and a deficient crop of maize, will prevent our receiving that supply from thence which we had calculated on.

In the Baltic provinces the harvest has been excellent both in quantity and quality. We have seen a sample of new Danzig wheat, for instance, which was said to weigh 66lbs. per bushel—an unprecedented weight for that description of imported grain. From Northern Russia we may expect a large supply in the spring, when the frost breaks up, the winter setting in too soon in that country to admit of any quantity being brought down the rivers in the autumn. The importations from thence last year were larger than usual; but the reason for this was, that there was a three-years' accumulation of grain at all the depôts, in consequence of the war, none having been exported in 1855, and only about 21,000 qrs. in 1854. It is not probable we shall obtain more than from 120,000 to 150,000 qrs. from thence this season.

From none of the German states did we import the usual quantity of wheat last year. Taking Denmark and the Duchies, Prussia, the Hanse Towns, and other parts of Germany, the average of six years from 1851 to 1856, inclusive, was 1,202,060 qrs. per year; but last year the imports from those countries amounted altogether to only 647,244 qrs., being little more than half the average quantity, and *less* than half those of the three previous years. If the failure of the potato crop extends to those countries, it is probable we shall not have more than, if so much as, a million qrs. from thence in the seasonal year, namely, from the 1st of October, 1857, to the 30th of September, 1858.

From France, Holland, and Belgium we shall import no native produce. Spain may send us a little; but her stocks were too much exhausted before the late harvest to admit of a large export trade. Egypt will send us about 500,000 qrs., Turkey proper 150,000 qrs., Wallachia and Moldavia about 150,000 qrs., and the Italian states, with Sicily, possibly as much more, their harvest having been an abundant one.

From Southern Russia we have received, the last three years, not more than one-third of the average quantity, in consequence of the quantity consumed and destroyed during the Crimean campaign. Trade, however, is getting into its regular channel in that country, and we shall probably import from all the Russian ports of the Black Sea 700,000 qrs.

We next come to the United States and British North America, to which quarter we must look for the largest sectional supply. We place these two together, because so large a proportion of the wheat and flour shipped at New York is the produce of Canada West, sent by way of the Erie Canal and the Hudson, as renders it impossible to ascertain the real amount of States produce we receive. Taking the same period of six years, the average imports of wheat and flour from the American continent amount to 1,345,611 qrs. per year, that for the year 1856 being 2,504,293 qrs.—the largest quantity we ever received from thence. It appears from the reports from the States, that the wheat harvest, both there and in Canada, has been very abundant, and that a large breadth of new land has been broken up in the western states, and sown with wheat. Under ordinary circumstances, therefore, we might expect as much wheat and flour from the American continent as we received last year. But it appears they had completely exhausted their stocks of old wheat before the harvest; and such is the state of credit throughout the Union, in consequence of the monetary panic under which it is now suffering, that it is impossible to say what may be the effect upon the grain trade, most of the merchants at Chicago and other shipping ports having been compelled to stop payment. If, therefore, we estimate the supply of wheat and flour from Canada and the States at 1,500,000 qrs., we think we shall have fixed the maximum of imports from thence.

The following is the summary of imports, as estimated in the foregoing statement:

	Qrs.
Northern Russia, say	135,000
Denmark & the Duchies, Prussia, the Hanse Towns, and other parts of Germany	1,000,000
France, Holland, and Belgium	——
Spain, say	50,000
Italian States and Sicily	150,000
Turkey proper	150,000
Egypt	500,000
Wallachia and Moldavia	150,000
Southern Russia	700,000
United States and Canada	1,500,000
Other countries	265,000
Total	4,600,000

With respect to the probable range of prices during the ensuing season, we do not apprehend that we shall have a much lower range than the present one. Taking into account the partial loss of the potato crop, the full employment of the manufacturing operatives, and, above all, the continued influx of gold from California and Australia, the consumption of bread corn will be larger than was ever known. It is probable that after wheat sowing a considerable quantity of wheat will be brought to market; but we apprehend that a demand for good wheat will come from the North of England, that will take off any surplus that may be brought forward. Upon the whole, therefore, we feel convinced that the present average price of wheat will be maintained with little variation throughout the season, which will thus prove amply remunerative to the grower, without being oppressive to the consumer.

The recurrence of two consecutive short crops of spring corn—that of 1856 being occasioned by a large portion of the land in regular course for barley or oats being sown with spring wheat, and that of 1857 the consequence of the excessive drought prevailing through the summer—has caused the price of both barley and oats to rule disproportionately high, and rendered necessary a larger importation than usual to meet the increasing demand. The enormous consumption of these articles of produce is, perhaps, one of the most striking evidences of the prosperity of the country. Wheat is a first necessity; and whatever retrenchments an Englishman may make in other things, luxuries or necessaries, bread must be provided, at whatever price, by importation—increased in proportion as the home crop is deficient. But the bulk of spring corn* is, directly or indirectly, consumed in luxury; barley being employed either in distillation of spirits or the manufacture of beer, and oats in the feeding of horses, a large proportion of which are kept for pleasure, or in the preparation of pleasurable objects. The increasing consumption, therefore, of these agricultural productions, is a proof of the increasing ability of the people to indulge themselves in those luxuries which those products represent. It was supposed, when railroads began to supersede the ancient mode of transit both of goods and travellers, that the age of horse-flesh was passing away, and the price of horses would soon be reduced so low that they would not be worth breeding. The contrary, however, now appears to be the result. It is a certain fact, not only that there are more horses kept than at any former period, but that the price of good horses has risen higher than before railroads were established or thought of. This will account both for the great consumption and the large importations of oats.

The following table exhibits the quantity of both barley and oats imported and entered for home consumption from the year 1841 to Aug. 31 of the present year inclusive, as taken from the Board of Trade returns:

BARLEY.	Qrs.	OATS.	Qrs.
1841	220,948	1841	20,419
1842	49,521	1842	280,600
1843	223,209	1843	40,801
1844	1,024,322	1844	259,136
1845	297,655	1845	582,910
1846	398,214	1846	966,134
1847	779,394	1847	1,751,683
1848	888,906	1848	868,706
1849	1,544,822	1849	1,350,379
1850	1,023,875	1850	1,149,758
1851	1,042,801	1851	1,107,177
1852	832,554	1852	1,209,844
1853	828,670	1853	1,035,072
1854	560,818	1854	1,029,305
1855	351,875	1855	1,044,143
1856	735,892	1856	1,156,790
1857 8 months..	1,262,181†	1857 8 months..	1,063,616

A very large proportion of both these articles of produce is brought from Northern Europe. Russia supplies more oats than barley; but the quality and condition of the Russian oats are generally much inferior to those from the Dutch and Danish provinces. The best barley is brought from the district in Germany bordering on the river Saale, and is brought down that river and the Elbe to Hamburg. Much of it is bought by the English maltsters, being nearly equal in quality to English malting barley. What barley is brought from the Mediterranean ports, especially those on the Southern or African shores of that sea, is of very inferior quality, and only fit for grinding.

It is impossible for us to give any correct estimate of the quantity of barley grown in the United Kingdom, there being no authentic data in England and Wales on which to found one. The returns of sales at the principal market-towns, collected by the Board of Trade, afford no adequate idea of the extent to which it is grown; and perhaps the quantity of malt on which the duty is paid is a more reliable, but still insufficient criterion. The following is the quantity of malt and spirits entered for home consumption during the period of sixteen years, 1841-56.

MALT.	Bushels.	SPIRITS.	Gallons.
1841	36,164,448	1841	20,642,333
1842	35,851,894	1842	18,841,890
1843	35,693,890	1843	18,864,332
1844	37,187,186	1844	20,608,525
1845	36,545,990	1845	23,122,188
1846	42,097,085	1846	24,106,697
1847	35,307,815	1847	20,639,797
1848	37,545,912	1848	22,202,453
1849	38,935,460	1849	22,962,012
1850	40,744,752	1850	23,862,585
1851	40,337,412	1851	23,976,596
1852	41,072,486	1852	25,200,879
1853	41,992,718	1853	25,021,317
1854	36,812,727	1854	25,883,581
1855	33,882,006	1855	21,957,275
1856	36,970,427	1856	23,300,556
	607,067,165		361,193,419
Exported	752,550	Exported......	13,084,960
Total	607,819,715	Total.......	354,278,379

If the above are divided by sixteen, it will give an average per year as follows:

Malt.	Spirits.
37,988,732 bushels.	22,142,398 gallons.

Reckoning nine bushels of malt to one quarter of barley, the above quantity of malt represents 4,220,970 qrs. of barley. Again: if we allow two gallons of spirits to one bushel and a-half of barley, we obtain the sum of 16,606,798 bushels, or 2,075,860 qrs. of barley. Added together, these amount to 6,296,850 qrs. as the average consumption of barley in the manufacture of malt and spirits. To these must then be added the quantities employed in fattening cattle and pigs, &c., of which we have no statistics whatever; nor do the papers of the Board of Trade throw any light upon the subject, their returns amounting to only an average, for fifteen years, of 2,475,064 qrs.—a very small portion of what is grown in the United Kingdom.

With regard to oats, we have still less to guide us in estimating the quantity grown. In England and Wales very few are sown by the farmers, beyond what they require for their own horses, except in the fens; and even these sometimes do not hold out from season to season, a considerable portion of what are imported into London and other large towns being purchased for country consumption. In Ireland and Scotland it is different; oats, like potatoes, being a favourite crop. It appears by the statistical returns of Irish agricultural produce, that the quantity of oats sown the last six years averaged 2,086,960 acres, which, if we reckon the crop at five quarters per acre, yields 10,434,800 qrs. And we find by the returns for four years (1847 to 1850) that the estimated average was 10,535,075 qrs. per year, which, as a large quantity of land was then lying waste, in consequence of the disturbed state of the country, was certainly not more than the present average.

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* The bulk of spring corn is consumed largely by agricultural horses, as regards oats; the remainder by horses kept for luxury or pleasure, &c.

† The quantity of barley in any given year consumed in malt depends greatly upon the *quality* produced; in some seasons, as in 1856, not more than two-thirds of the crop could be used for malting purposes.

The quantity of barley produced in Ireland, in the four years from 1847 to 1850 inclusive, is estimated in the returns of the Board of Trade at an average of 1,291,586 qrs.; and as more land is now under tillage than at that calamitous period, we may fairly reckon on an equal quantity at this time.

In Scotland the quantity of land sown with spring corn is ascertained by actual inspection, which the Government would do well to adopt in this country. According to the returns for 1855 and 1856 the respective number of acres stood as follows:

	1855.	1856.
Barley........	186,082½	165,663½ qrs.
Oats	933,662½	918,258½

Taking the average of these numbers, and reckoning the produce of barley at 5 qrs. and of oats at 6 qrs. per acre, we obtain the following results:

Barley........ 175,873 × 5 = 879,365 qrs.
Oats .... 925,960 × 6 = 5,555,760

In a letter on the barley trade, dated the 29th Oct., 1856, the writer has estimated the average breadth of land under barley at 2,250,000 acres, being half that of wheat; this was for the whole of the United Kingdom. If we therefore deduct 175,875 acres for Scotland, and 322,897 for Ireland, we have remaining, for England and Wales, 1,751,228 acres under barley, which, at 5 qrs. per acre, amounts to about 8,750,000 quarters. The estimated quantity, therefore, is as follows:

	Barley.
England and Wales	8,750,000 qrs.
Scotland	879,365
Ireland	1,291,586
Total..	10,920,951

The breadth of land under oats we estimate, for England and Wales, at half that under barley, say 850,000 acres, which, at 6 qrs. per acre, gives 5,100,000 qrs. These, added to the quantities for Scotland and Ireland, make up the following amount:—

	Oats.
England and Wales..........	5,100,000 qrs.
Scotland	5,555,760
Ireland	10,535,072
Total..	21,190,832

We are making an effort, by personal application, to obtain from authentic sources the quantity of corn, &c., grown in each district of England and Wales; and shall, therefore, have occasion to recur to the subject again, in a future number.

A DAY AT WARLABY.

What a treat to the real lover of short-horns! Even to the uninitiated it is a treat of no ordinary character; but to those who can really enter into and appreciate the various points of these noble animals, it is one of superlative pleasure. Nowhere else (we write it without fear of contradiction) can such a sight be seen as that presented by the far-famed Warlaby herd. It has been our happiness to visit it on various occasions, and well do we remember the feelings with which we gazed for the first time on these wondrous animals. The forms of those splendid cows—"Isabella Buckingham," "Bagatelle," "Hawthorn Blossom," "Cherry Blossom," "Plum Blossom," "Rose Blossom," "Charity," &c., &c., would perpetually rise before the mind, and effectually robbed us of that night's rest. Lately it has again been our lot to spend a few hours with our kind friend Richard Booth, Esq., the owner of this magnificent herd, and we cannot forbear jotting down a few of the impressions we received on the occasion. We may notice at the outset that the most of Mr. Booth's bulls are from home, being hired by noblemen and gentlemen in all parts of England, Ireland, and Scotland. So popular are these bulls, that applications for them are continually made months before the several animals are at liberty. His Royal Highness Prince Albert is now using one of them for the third season, and is so pleased with him as to have ordered his portrait to be taken. Among the bulls so "*let*" we may mention the names of those celebrated animals—"Vanguard," "Baron Warlaby," "Hopewell," "Harbinger," "Highthorn," "Sir Samuel," &c. But to return. We have paid our respects to the worthy owner, and after partaking of his well-known hospitality, we set forth to view the herd. We are first conducted into the large pasture near the house, where our old friend "*Cuddy*," the herdsman, is in attendance. Presently we find ourselves in the midst of a group of animals, which cannot fail to astonish the beholder. Here we see the splendid bull "*Crown Prince*"—the sire of the greatest number of prize-winners ever known. He is, perhaps, the most successful and sure bull of his day. Next we scan the cows, and what a host of well-known names have we here! "Satin" and "Sarsnet," "Bianca" and "Vivandiére," "Blithe" and "Blitheful," "Charity," "Red Rose," and "Princess Elizabeth," with numerous others. At the time of which we write, no less than seven cows are within a short time of calving. This speaks well for the prolific character of the herd. Among the rest, our attention is drawn to "Red Rose," the dam of the celebrated trio, "Queen of the May," "Queen Mab," and "Lord of the Valley." As we gaze on her beautiful form, we are not surprised that with "Crown Prince" as sire, and "Red Rose" as dam, such perfect specimens as the three named should be the produce. The cow is now on the point of calving again, or probably has already calved. May the fourth be as good as the others—better it cannot well be. In another field, we are shown that noble and perfect specimen of his race, "Windsor," by "Crown Prince," out of the famous prize cow, "Plum Blossom." This bull is well-known to the short.horn world, as the winner of all the first prizes of his day. Time and space prevent our dwelling on other animals well worthy of notice in the *fields*. We must now repair to the *houses* and their occupants. If we have been amazed with the show in the fields, what shall we say of the splendid animals to which we are now introduced? Here we have the *cream* of the herd. The cows "Nectarine Blossom" and "Bride Elect," with that remarkable prize animal, "Bridesmaid," first engage our attention. We are lost in admiration as we view these surprising specimens, and we think—What next? We proceed onward, and still new wonders attract our attention. A splendid heifer calf, "Queen of the Isles," by "Windsor," out of "Princess Elizabeth," is next brought out. A judge at once sees here the points of a first-class animal. She has twice been shown, at York and Stockton, and on both occasions was twice decked with the first prize riband. In the next house we find the beautiful son of "Red Rose," "Lord of the Valley," an animal, in every sense of the word *excellent*. He has been "let" for a very high price, to one who knows his merits. His own sister, "Queen Mab," comes now before us, and is no disgrace to her high-bred relatives. She is truly a superior animal. But what have we here? The justly celebrated heifer, "*Queen of the May*," the eldest of the three. In her we see the *ne plus ultra* of a short-horn. Such symmetry and beauty we never saw. We feel we cannot describe her: she must be seen to be appreciated. This wonderful animal has been exhibited on various occasions, and in almost every case has carried off the first prize. At the recent show at Salisbury the judges awarded her only the second prize. We hesitate not to say that a greater mistake was never made. "Queen of the May" has since, however, regained her lost laurels. At York she took her proper position, and at the Durham County Show, held at Stockton, the gold cup, value 100 guineas, was awarded to her as the best animal in the yard. Here she beat Colonel Towneley's prize animals, "Victoria" and "Rose of Towneley." Mr. Booth's success at both York and Stockton was unparalleled! And no man more richly deserves it than this eminent breeder. We cannot, however, close these remarks without noticing that rare cow, which has so long graced the Warlaby herd, old "Charity," whose grandam and dam were those superior cows, "Faith" and "Hope." This cow, the dam of "Crown Prince," "Sir Samuel," &c., won every prize of her day, save one, when she was beaten as a calf by another of the same herd. After this, her career was one of unvaried success. The probability is that such a cow was never shown. Yet the three Queens, "Queen of the May," "Queen Mab," and "Queen of the Isles," bid fair to equal even the far-famed "Charity." And now we must take leave of our truly excellent host, assuredly the most successful breeder of the short-horns of his day. Long shall we remember with gratitude his kindness, and recall with feelings of sincere pleasure our *Day at Warlaby.*

TESTIMONIAL TO WALTER JOHNSON, ESQ.

The eminent and valuable services of Walter Johnson, Esq., as Secretary of the Northumberland Agricultural Society, received an appropriate and substantial acknowledgment in a testimonial presented to him at a public dinner given to him at Morpeth, on Thursday, Oct. 8. The testimonial consisted of an elegant silver epergne and four handsome silver corner dishes, value £230, and a purse of gold containing £270—making £500, subscribed by the members of the Society and others; and the entertainment at which it was presented was held in the Borough School Room, and attended by nearly 150 of the most influential gentry, landowners, and agriculturists connected with the Society. In front of the cross table at the head of the room the epergne and dishes were displayed. They were obtained from Messrs. Reid and Sons, of Newcastle-upon-Tyne, and the three shields of the epergne contained the following inscription:—

"This Epergne, together with four Silver Corner Dishes and 270 sovereigns, was presented to Mr. Walter Johnson, at a public dinner at Morpeth, on the 8th day of October, 1857, by the Members of the Northumberland Agricultural Society, in approbation of his assiduous services as their Secretary for thirteen years. Chairman of the meeting, Sir M. W. Ridley, Bart.; Vice-Chairmen, Messrs. John Angus, Whitefield; Thos. Mason, Pallinsburn; and Ralph Nisbet, Elwick.—312 subscribers."

The banquet, which was provided by Mr. Braithwaite, of the Queen's Head Inn, and was of a most sumptuous description, was presided over, as stated, by Sir Matthew White Ridley, Bart.; the worthy baronet being supported on the right by Mr. Johnson; Lord Lovaine, M.P.; Chas. Wm. Orde, Esq., Nunnykirk; W. J. Lawson, Esq., Longhirst; John Cookson, Esq., Meldon Park; the Rev. R. H. Williamson, Lamesley; and on the left by the Mayor of Morpeth; the Hon. H. G. Liddell, M.P.; J. H. H. Atkinson, Esq., Angerton; and Rev. J. Elphinstone Elliot, Whalton. The Vice-chairmen officiated as above, and there were present also the Mayor and Sheriff of Newcastle; Messrs. J. Pattison, Norwood; John Robson, Sunniside; Thomas Trotter, Bywell; H. W. Fenwick, Newcastle; Wm. Grace, Newbiggin; Hugh Taylor, Earsdon; Joseph Snowball, Netherwitton; J. C. Langlands, Bewicke; Wm. Swan, Walker; H. P. Wilkin, Alnwick; John Bolam, Glororem; Robt. Dand, Field House; Thos. Bolam, Boulmer; Frederick Turner, Blagdon; George Atkinson, Seaham Hall; Robt. Hall, Downham; Thos. Smith, jun., Chillingham New Town; Thos. Pattinson, Derwent Grove; T. C. Colbeck, Newcastle; J. E. Wilkinson, Roker; Ralph Atkinson, Lilburn; J. M. Dixon, Netherwitton; R. Menzies, Calder; Ald. Dodds, Newcastle; R. Coull, Middleton; Thos. Robson, Alnham; W. Clark, Bothal Park; G. J. Kenmir, Gateshead; J. M. Favell, Eighton Banks; J. Bolam, Alwinton; G. Bolam, Woodhouse; Jas. Ross, Whittingham; J. Coull, Rothill; Samuel Donkin, Bywell; Jos. Willis, Ellington; Thos. Bell, Ellington; Mark Spraggon, Nafferton; J. Appleby, Abbey Mills; Wm. Woodman, Morpeth; T. Chrisp, Hawk Hill; J. Stephenson, Thrunton; E. Waugh, T. Dotchin, H. Colbeck, J. Aynsley, G. M. Dixon, J. Davison, J. Colbeck, N. Wright, J. Richardson, G. Atkinson, T. Potts, W. S. Bolam, D. Dotchin, T. Swanson, R. Swan, Jas. Bell, G. Blair, John Holroyd, &c., &c.

After the usual loyal toasts,

The CHAIRMAN rose and proposed "The Health of Mr. Johnson." He said it was now his agreeable duty to convey this well-merited testimonial to their worthy secretary; and they must all concur with him when he said that it would be difficult to find a gentleman who had seen as much of late years of the workings of that Society as he had who would not bear testimony with him to the unwearied perseverance and assiduity, or, as was set forth in the inscription placed upon the plate to be presented to him, to "his assiduous services as their secretary for thirteen years." To the truth of that remark he bore ample testimony (applause). He could equally bear testimony, as, he had no doubt, could all present, to his universal courtesy to all who approached him on all occasions (loud applause). On the first movement for this presentation, which originated with the landed occupiers in the county, the strong feeling of that gentleman was not to receive any subscription, except that in the tangible form before them on the table. The feeling, however, arose so strongly in his favour, and it was entertained so strongly in all parts of the county, that the sum was more than sufficient to invest in the plate, which he thought to be an acquisition to his family. Upon that it was resolved that the other portion should be presented in a purse (applause). When they remembered the distances which Mr. Johnson had travelled during these thirteen years, the unavoidable personal expenses which he had been put to in his travelling, and which he had always borne himself, they would all agree with him that it was but right and meet that such good services should meet with their reward. He himself was glad when asked to join in this matter, that it originated with those who were occupiers in the county and not with the landowners themselves as a body (applause). At a meeting held in that town, it was received with a fervour which had never diminished up to this moment. (Hear, hear.) He need scarcely remind them that a number of years ago, the funds of the Society and the importance of its meetings was very inferior to what they have been for several years past; and that the Society altogether, in point of position, numbers, meetings, and donations, was much less powerful than it was at the present moment; and they could not on this occasion but think that a good deal of that better position had been due to the good offices, to the zeal and activity of the Secretary, who had represented them, both in communications by letter and by personal communication, with all the many individuals in this wide county. He was sure that this had been evidenced from the early period of the movement to the present moment by the large sums that had been received. The very handsome sum of £230 had been invested in the plate, and there remained £270, which he would have the pleasure of presenting to Mr. Johnson. His own feelings for Mr. Johnson were those of regard and respect; and it only now remained for him, in the name of all the subscribers, and in the name of the Northumberland Agricultural Society, to present him with the plate he saw before him, and likewise the purse of money in which was inclosed 270 sovereigns, with every wish that he and his family might long live to enjoy the donation now made to him, and that the plate they now saw on the table would form a useful acquisition to his wife and family, and add, if anything could do, to that sunshine and comfortable fireside which they all rejoiced to feel he now possessed (prolonged cheers). Long life and happiness to Mr. Johnson, and may he long be spared to his wife and family, and to this Society.

The toast was drunk with immense cheering.

Mr. **Walter Johnson** rose, and the cheering was renewed. He said it was with feelings of deep emotion that he rose to respond to the gratifying remarks made by the Chairman, and to return his heartfelt thanks to his many friends whom he saw around him, and who had done him the honour to present him with that beautiful gift, which would ever testify to him the estimation in which the humble efforts he had made towards the welfare of the Northumberland Agricultural Society had been held during the thirteen years he had had the honour of acting as their secretary (cheers). Permit him to add that, if encouragement had been necessary, the very kind co-operation and assistance which he had at all times met with from the whole of the members of that flourishing body would have been sufficient in his mind to have compensated for any little exertion he might have made. Before he sat down he begged to be allowed to express to Sir Matthew White Ridley, and the many friends he saw around him, his acknowledgements for their having travelled so far, and the inconvenience they had put themselves to, in order to pay this marked tribute of esteem towards him (applause). He could assure them that as long as he lived it would remain deeply imprinted upon his mind (applause). Again he thanked them, and wished them heartily farewell. Mr. Johnson resumed his seat amidst renewed applause.

Several other toasts were afterwards given and responded to; many of the speakers complimenting the Secretary of the Northumberland Agricultural Society, and expressing the satisfaction they felt at being enabled to be present at the presentation of the testimonial to him. After spending a most agreeable evening, "The next Merry Meeting" was given with loud cheers, and the company broke up.

THE IMPROVED COTTAGES FOR LABOURERS.

The annual meeting of the West Kent Labourers' Friend Society took place at Tonbridge, on Wednesday, October 7. In accordance with the wish of the committee, many of those present visited the model cottages erected near the railway station by Mr. George Punnett, builder, on the society's plans.

The Rev. W. M. Smith Marriott was called to the chair.

The **Chairman** said he had been greatly in hopes that the Marquis Camden, their president, who took so lively an interest in the society, or the Earl Darnley, one of the vice-presidents, who had taken a great interest in the society also, would have presided on this occasion. Circumstances, however, had occurred to prevent those noblemen attending. He had himself felt a great interest in the society; and although, of course, he had not the influence which those gentlemen had, he should be happy to use his best exertions in any way in which he could promote the interests of the society. Some time ago he had the pleasure of seeing two of the model cottages, not those represented by the model on the table, but two others then in the course of erection, and he hoped that landlords would avail themselves of the models and plans of this society, by which they might not only much benefit their estates, but greatly benefit their labourers and whoever lived in their cottages. He recollected that it had been said by an American author, whose graceful and delicate compositions they were most of them acquainted with—he referred to Washington Irving—that in his rambles in England, whenever he came to a secluded village, with nice cottages and gardens, and saw through the trees the squire's house, whenever he saw a good parsonage, a good church and churchyard, neatly kept, and the cells of the forefathers neatly observed and due honour paid to them—in such villages he observed and found that the people were happy and contented, that they were generally moral and well conducted; and he (the chairman) did believe that if a little more attention were paid than generally was the case to the dwellings of the poor, a very great change would be made in their habits. Much had been done in the way of improving cottages in England, and they could bear comparison not only with the sister-country, but with any country in the world. Still there was more yet to be done. There was one thing much to be condemned, and it was the system of persons purchasing a little land, and building a lot of ill-conditioned cottages, with no gardens, and charging a high rent. If a little more attention was paid to this subject, the landlords would feel convinced of the benefits which they might confer upon the poorer classes, and the very great social change which they might be the means of bringing about by giving them comfortable homes. It might be said to be a home education. There were some things the labourer did not require to know, but to teach the honest labourer cleanliness, to make him feel self-respect, to make him feel that he can be as happy in his little cottage as the nobleman in his castle or the Queen on her throne, would make him a better man. He thought a tribute of praise was due to Mr. Martin, who had exerted himself much, and done all he could to promote the society.

Mr. J. WHATMAN, M.P., proposed the first resolution, "That the report be adopted, and that this meeting expresses its satisfaction that the attention of the committee has been so actively engaged by the important subject of improving the dwellings of the labouring classes." After expressing a hope that their proceedings would get publicity, he said with respect to improvements of cottages, and the effect produced upon the tenants of them, he was happy to add his humble testimony to what had been said upon the subject. It so happened that the first cottage he had to repair was in such a state that he had to rebuild it. The result was far greater than he could expect from any alteration of the kind. He made the most important improvements that he saw, and made the cottage with more accommodation than the model ones, as it was necessary for the family. The family was rather a rough one before, but no sooner had he built them a good cottage than a marked improvement was perceptible in their manners, and he had never had cause to regret what at the first appeared a needless expense. He had been over and over again repaid in the improved condition and manners of the family. He would say a few words in reference to some remarks made by the chairman on the fact of improvements being required in the cottages throughout the kingdom generally. He happened to have passed a good deal of time in another part of the country, where improvement was required much more than here. Even in Ireland the improvement wrought in the people by attention to their dwellings was very striking. But in this country the dwellings of the poor required more attention than those of many other countries. One of the most striking instances of the effect of putting the Irish under a different mode of treatment than they were usually accustomed to, was seen during the famine in Ireland, when some of the unfortunate people remained in the poor-house for several years. He was speaking of the north-west of Ireland. It was remarked that when those people who had been kept under proper treatment for three years left the poor-house they did not return to their bad habits, but appreciated better dwellings and a better mode of living; but that those who were not under the influence of proper treatment for three years returned to their former habits. Accustomed to live as the Irish people were, it was a most difficult thing to improve their habits; but if they could be improved, with how much more success might they turn their attention to the improvement of the homes of the English poor, who were perfectly alive to domestic comfort? He did not know that he ought to make any remarks upon the plans they had seen that day, or on the cottages which Mr. Punnett had been so good as to erect. If he might give an opinion, he thought the arrangements in the houses were a very great improvement on those of a very large proportion of cottage property, and were effected at a surprisingly small cost, thereby forming a great inducement to those who wished to build cottages to adopt their plans. But it seemed to him they would not do for all localities, as some required a more expensive cottage than others. The cottages appeared to be extraordinary ones for the cost; and as the plans were made known, he thought they would get statistics which would help them in their future operations. It was quite extraordinary, in looking over the country, to consider, on the one hand, to whom the great bulk of the land belonged, and to see, on the other hand, to whom the great proportion of cottage dwellings belonged. The land belonged comparatively to a few of the rich; but he believed the far greater proportion of cottage property belonged to that class of persons, who, however able to appreciate comfort in the dwellings, and however disposed to make them convenient, had not the means to make proper cottages. They were, to a very great extent, labourers themselves, and servants in actual service. The chief reason of this was, that cottage property was supposed to give a high rate of interest for investment. Consequently, those who had saved a little money invested it in this way. When people asked his advice in this matter, he told them not to buy or build anything of the sort, giving them a reason with which they were generally perfectly well satisfied. He told them "It is very true you get a large return in the shape of interest in rent on your purchase money, but you forget to look forward to the repairs which sooner or later will be necessary." If they looked through the parish they would generally find that when the houses possessed by these people became out of repair, they were tenanted by a class of people more or less troublesome. He did think that it was the duty of owners of property, so far as they could, to pay more attention to this subject, with a view to provide better house-accommodation for the labouring classes cheap. They knew that builders, and the class of people he had referred to as anxious to be the owners of cottage property, both worked together—unfortunately, as he thought; but they were working together, the one to buy up any small plots of land on which cottage property could be raised, and the other class were equally ready to buy the plots of them. He thought these facts only required to be known, and it would stop some of those small capitalists from becoming the proprietors of such property, and would induce those who could to take up the matter of improving the cottages of the working-classes. He therefore hoped that through the gentlemen of the press, the proceedings of this meeting and the objects of this society would be made known to all classes of the people.

C. WHITEHEAD, Esq., in seconding the resolution, thought two bedrooms not sufficient, and was informed by

The SECRETARY that there would be three: one of the lower rooms was to be used as a bedroom.

The Rev. M. ONSLOW proposed, "That, having inspected the model cottages in Prior-street, this meeting declares its cordial approval of the design, and recommends it for general adoption." Although not approving of the cottages in every respect, he could speak to the importance of the general question, but he could not pledge himself to the model, for he thought there ought to be three regular bedrooms of a larger size than proposed. In this opinion, therefore, the model failed in a very important point. The arrangements seemed comfortable so far as they went. He objected to the outhouse being attached behind. It should be forty or fifty feet from the house, if possible. If attached it would be found very injurious in some cases. There was a great deal in these cottages which was very nice, and a great deal might be worked out of them, but he could not commit himself to say that they were unexceptional models.

Mr. **Masters**, who was to have seconded the resolution, agreed with the last speaker's objections. These cottages, he said, were more suitable for the town, where water and drainage would counteract any unpleasantness that would otherwise arise from the outhouse not being detached. He was afraid, however, it would not do for the country, where water and drainage would not be applied. He understood that the lower room was only to be used as a bedroom in case of sickness.

The resolution fell to the ground, the meeting agreeing with the last two speakers.

The **Secretary** mentioned that Mr. Kibble stated in his letter that he had built two cottages on the plan, with a modification. He had put the outhouse at a distance. He approved very highly of the model as an economical arrangement. He (the secretary) said the object of the committee was to make such a cottage as would meet the wants of the labourer, and such a one as could be let cheap, with a reasonable interest to the proprietors. If three regular bedrooms were made, it would cause an increased rent he was afraid.

Mr. **Whatman** said a tank cemented was perfectly sufficient to prevent any unpleasantness from the outhouse being near the cottage. He had had some experience in this matter, and he had not found any inconvenience from the nearness of the outhouse, when he used the tank.

Mr. **Punnett** said, with a drain and supply of water by a syphon as at the model cottages, there could be no smell. Of course, in the country water could not be laid on.

F. **Goldsmid**, Esq., said he should scarcely have offered any remarks on this occasion, not having taken a part in the proceedings of this society, had he not had his attention directed elsewhere to this very subject, and he had been so completely convinced how very essential it was to the health and welfare and morality of the labouring classes that they should have decent homes, that he should feel that he had not done his duty if he did not give this society his support. He shared the feelings of the rev. gentleman who said he did not like to pledge himself to this particular building, but he thought the resolution put into his hand was not open to the objection given to the last. It was "That the thanks of this meeting be given to Mr. Punnett for the good assistance he has rendered to the society by the erection of the model cottages." He (Mr. Goldsmid) thought two bedrooms were not sufficient accommodation in these cottages. It was also quite necessary that the expense should be borne in mind, for although the feeling of many was excited on this subject, they were not so strongly impressed with the duty they owed to others as to give them decent and comfortable homes without a fair return for the outlay; they must limit the expense of the model if they wished to give rise to a national movement on this important question. He thought this society did owe a great deal of thanks to Mr. Punnett for having brought their plans to the test, but he hoped the plans would be greatly improved.

The **Secretary** seconded. It was a great objection, and one which would be well considered by the committee, that the cottages were too small; but if the cottages for the labouring-classes were made larger they would find that another great evil, which was intended to be got rid of, that of taking lodgers, would be encouraged instead of abated. The rooms were thought quite sufficient for an average family of five persons. Perhaps he ought to mention how the society, as now constructed, originated. The speeches made at the agricultural meetings last year and the year before, all began by saying that the cottage accommodation was insufficient or bad, and unless that was seen to, it was useless to give them either library, newsroom, or spiritual instruction. It was in consequence of these speeches that the committee reconstructed the society on the present plan. With respect to the objection to the model because it had not three bedrooms, he said no one would like three bedrooms more than the committee; but then it would defeat the object, he was afraid, by increasing the expense. Some gentlemen did not look to the cost, only to the benefit, but those gentlemen were unfortunately not very numerous; therefore it was necessary to combat the evils they met with through this society, rather than leave them to what was in this day a somewhat chivalrous feeling of generosity. It was a very generous thing on Mr. Punnett's part to put up these cottages on his own account. He (the secretary) thought and hoped he would not be a loser by it.

Mr. **Punnett** acknowledged the vote of thanks, saying he was very much pleased if he had been of assistance to the society. He explained how he built the pairs, one after the other, adding improvements as he proceeded, under the instruction of Mr. Martin, their agent.

The **Secretary** referred to the origin of the former society. At that time there was a great deal of excitement from stack-burning, and this society was started with a view to ameliorate the condition of the poor. It had been the means of doing a great deal of good, and of giving the minds of the agricultural labourers a more practical turn than that of burning ricks. It went on for a great many years, and had allotments in forty parishes, but at last it fell almost into desuetude, and might entirely have done so, but for Sir E. Filmer, who was the means of the old committee being summoned to Maidstone, when the committee considered what could be done. Some thought of going on with the old system of allotments, and some thought it would be better to attempt the improvement of the cottages of the working-classes, which object was adopted. The operations of the society were humble, and the funds moderate. Their object was to get as perfect a model as possible, and then distribute the working plans where they were mostly wanted, and to make them known as widely as possible. They certainly did require some little funds, and as the proposed model could not be acted upon after what had taken place, but would have to be modified a little, it would entail some further expense. He therefore should be glad to receive any subscriptions.

(Several gentlemen became members at the close of the meeting.)

The Rev. Mr. **Onslow** moved a vote of thanks to the rev. chairman, which

Mr. **Whatman**, M.P., seconded, and in doing so said he would make one or two remarks, if it would be in order, on what had taken place at the meeting. He was inclined to think they had not appreciated the labours of the committee, and the plan that had been put before them; and he rather regretted the decision to which they had come, for this reason: he could not think but that they might have adopted the plan which the committee had taken such pains to bring before them, so that they might judge of its merits and demerits, if it had any, because it could not be expected to do for all classes of poor for all localities. It did not profess to provide accommodation for all families. It was put before them simply as a good plan for adoption or modification as circumstances required. Such cottages as these would certainly be a very great improvement on many existing buildings. He could not therefore but hope that although they had not been formally approved of, the committee might see their way clear to circulate their views on the subject, that other people might have the benefit of their labours, and that other gentlemen might be induced to turn their attention to the subject by having these plans put before them.

The CHAIRMAN was extremely obliged for the compliment which had been paid him. Before sitting down, he might be allowed to say that he agreed very much with Mr. Whatman's last remarks. He (the chairman) thought with a very little alteration the model would be such as could be offered for public acceptance. He hoped that they might be the nucleus of something which might be of great and general good. He hoped it would go forth from this meeting that, although the model was not formally approved by the meeting, still that the model was very much approved of as a model, and that it required but a slight modification to make it a more practical model. The proceedings then closed.—*Abridged from the Sussex Advertiser.*

SOUTH-WEST MIDDLESEX AGRICULTURAL SOCIETY.

MEETING AT ACTON.

The framers of that time-honoured Acton notice, that "*waggoners and carmen are forbid to stop their horses in this village, as it is very injurious to the health of the inhabitants,*" would have been fain to wink at the suspension of their sanitary order, in favour of those merry freights of rural visitors who reached their village for this festival on Wednesday, Oct. 14. The present was its 21st ploughing anniversary; but the cattle and poultry show has only numbered four autumns. Hitherto the sphere of the latter has been bounded by Middlesex, but as the quality of the stock was so good this year, and the receipts more than twice as great as last, it is in contemplation to throw the show open to some other counties. So far Middlesex has been a laggard amongst its fellows in this branch of competition, but we have no fear of its being able to hold its own under the new radius. Why should not commercial and professional London flock to its Middlesex Show, with the same keen instinct which causes it to make an annual pilgrimage to Baker-street, to behold its savoury Christmas dinner in anticipation? As good luck would have it, the recent Order in Council had the effect of postponing the meeting for a week, and thus the "weeping skies" of the 7th were exchanged for a bright sunny afternoon, which brought a very large crowd to the Gunnersbury Farm, where the ploughing match came off. Baron de Rothschild was unfortunately absent; but the Baroness, with several of her family, were on the ground throughout the greater part of the day.

Under Mr. A. H. Johnson's masterly management this Manor Farm has long since won itself a name. Not many years ago it was comparatively a barren spot, but in 1856 nearly all the winning roots at the Birmingham Show were its produce; and as some 200 cartloads per month of London manure are being laid on, it bids fair to be the fruitful mother of many more. "Seven inches deep" were the prize ploughing instructions, which rather baffled some of the men from a distance, who had not been accustomed to exceed five; but still nearly all the work was of a very first-class character. Middlesex triumphed over Bucks and Surrey united, in the "county challenge," and the farms of Mrs. Ginger, of Stanwell, and Mr. Sherborne, of Bedfont, furnished the winners.

The field presented a very lively scene, as the half-a-hundred ploughs, whose drivers and men each wore a pink "Speed the Plough" token round their hats, "made tracks" from eight to one, with that veritable "do or die" Saxon air stamped on every feature. Spectators they had in plenty, and a fine show of coming ploughmen in arms might have been extemporized on the spot. In fact, part of the field reminded us of a large rustic Bartlemy Fair. Hard by the waggons which contained the hay-binding handiwork of seven competitors, "Three sticks a-penny" was in great force; and not a few availed themselves of the invitation "To come and see John Bull," enacted on this occasion by a sturdy Boniface, who presided bodily over an interminable pile of ham, beef, and cheese. Those of his friends and visitors who chose to drop in, had a hearty welcome at Mr. Johnson's house, on their way to see the steam-ploughing, which was a very salient feature in the programme of the day. One of Boydell's traction engines, bearing the sterling imprint of "*Burrell, Thetford,*" slowly careered round the field, with Fowler's patent five-share apparatus in its wake; but, although the work improved at the second or third round, the furrows would hardly bear comparison with those we had just left; and the labourers, who flocked to see the novel monster, departed not one whit less cynical than before. Williams's six-share apparatus was in waiting; but it was not set to work while we were present. Early in the afternoon, the prizes to the farm-servants and labourers generally were given to the winners by Viscount Villiers, under a large tent in the ploughing field, and each sum was accompanied by a printed certificate in a neat frame. There were nearly eighty recipients, exclusive of the ploughmen and haybinders, and yet about eighteen premiums were unallotted. We do not quite comprehend the invidious sliding-scale of praise, which the committee adopt, as it ranges from "a very honest, sober, and industrious servant" down to simply "a steady man," or nothing at all, and yet both get the same amount of prize. On what principle moreover is "very" and "sober" so often added or omitted?

The *venue* of the cattle and poultry show was laid in Baron Lionel de Rothschild's Acton paddocks, which Evening Star and her seven fair thorough-bred friends and families had to vacate for a time. Their boxes were appropriated to the horses, which numbered 21, while the cattle (33), the sheep (28), the pigs (18), and the poultry (74) were placed under canvass on the two other sides of the paddock. The whole arrangements were of the most tasteful kind. On entering, the visitors were ushered into the poultry department, the pillars of which were wreathed with green creepers and many-coloured dahlias; while above the inside entrance a huge white chanticleer kept watch and ward, and looked down from amidst his gay festoons on his flesh and feather friends beneath with this defiant notice—"*While I live, I'll crow.*" The pigeon-pens were placed in the middle of the room; and on a mahogany slab above the principal of them stood the elegant little silver cup, rich with farm-yard emblems, presented to the Society by Baron Lionel de Rothschild, and for which Mr. Eley just defeated Mr. Strafford by one point when the balance of the first and second prizes (in which the poultry are not reckoned) were finally struck. The Aylesbury ducks and the Cochins made up for short-comings in the geese and turkeys, which could only boast of one entry between them; and although Mr. N. M. de Rothschild's game-cock was remarkably good, our fancy inclined most towards Mr. Eley's winning pen of Dorkings, whose seven-guinea label was the highest in the show. Barring the Shropshire Downs, there was not much to please the sheep-fancier's eye; but the pigs were especially choice. The prize for "sows of a large breed" was a very moot point between Mr. Eley's black Berkshire and Mr. Strafford's white Yorkshire; and the triumph of the black is not a little enhanced by the fact that the Yorkshire was one of the three prize gelts in Mr. Watson's winning pen at the Royal Agricultural Society's show at Carlisle, and that one of its fellow-pigs on that day won at Salisbury this year. The Exhibitor, who stood only second in the large, was however more fortunate with the "sows of a small breed"; and his one-year-old "Perfection," with her three charges, was very true to her name. The same remark applies to this gentleman's trio of three-month sow pigs, by Old Joe (sire of the Salisbury prize boar), out of his celebrated Ducie sow; and he sold a boar out of the same litter, in the course of the afternoon, to Mr. Wilson, for H.R.H. Prince Albert.

Baron de Rothschild's fine stylish bull, "Sir Antony," was the winner in his class; Mr. Webster's, who came next had a good carcase, but was coarse-horned, though he had unfortunately turned those weapons to some account by severely goring his attendant over-night. "Old Buck," a good little animal, kept up the fame of the Fawsley herd, at whose sale he was purchased as a calf for 115 guineas; and out of the ten cows behind "Molly," no less than five were "highly commended." Mr. Strafford was first and second in the heifer class, with Camelia, by Bates's Refiner, and Maria, a very near relative of the great John o'Groat. After all, Baron Rothschild's beautiful couple of cow-calves—Nun (by Friar John, a son of the Duke of Glo'ster), and Beatrice 2nd—had a larger levee of admirers than anything; and they will be heard of hereafter. Both their dams were among the "highly commended" in their class; and for Beatrice Captain Gunter's agent offered 100gs. in vain.

The leading feature of the Horse Show was the prize chesnut Suffolk stallion, Briton, the property of Mr. Shackle, of Hayes; and a more expressive head and well-formed crest are seldom to be found. His fellow-grey had very fine length; but his front legs were placed too forward, and he was somewhat feeble on them. Both were in capital trim, and had been working regularly on the farm till the Friday before. The second-prize horse, a black one, showed much better out of the stable than in it; but there was more style about Mr. Haynes's roan, though he had hardly size enough as yet. Mr. Michael Robinson of Heston's bay mare was voted a gem; but her foal was not, to our eye, at all equal to that of the chesnut Suffolk mare, which ranked next; and Mr. Baxter, of Southall, was also very successful in Classes 2 and 4, for young cart stock. The mares and foals "for general purposes" were a very uneven lot; but the fiat in favour of a lengthy chesnut of Mr. A. H. Johnson's admitted of no dispute, as the next-best hardly rose the cart ranks. A small, very half-bred-looking Arab was shown among the extra stock; but his eccentric attendant commanded the most attention of the two, though he could not be tempted to bring his "Crimean hero" on to the parade outside.

The vegetable world was not recognized; and we saw no trace of it, save in one solitary "marrow" near the cup-stand. Implements were also unrepresented: and the only specimens of handicraft were a waggon, in the centre of the paddock, which did good service as an orchestra; a double roller; and some wire railings; while the indefatigable Thorley unfurled his "Food for Cattle" banner at one end, and was faced by two specimen-baskets of superphosphate. However, what with the ploughing by hand and steam, and the show, the visitors had no regrets. About 140 gentlemen dined together, in the afternoon, at the Star and Garter, Kew-bridge, under the presidency of Viscount Villiers; and, from what transpired, there seems every chance, by another year, of the society emerging from its snug little chrysalis state, and challenging a comparison with the most flourishing of the provincials. The following is a return of the awards for stock:—

AWARD OF PRIZES.

HORSES.

Stallions (for agricultural purposes) of any age, foaled previously to the 1st of January, 1855.—First prize, Mr. Thomas Shackle, Hayes; second, ditto.

Stallions (for agricultural purposes), foaled since the 1st of January, 1855.—First prize, Mr. H. P. Baxter, Southall Green; second, ditto.

Mares and Foals (for agricultural purposes).—First prize, Mr. M. Robinson, Heston; second, R. H. Cox, Esq., Hillingdon House.

Cart Fillies (for agricultural purposes), foaled since the 1st of January, 1855.—First prize, Mr. H. P. Baxter, Southall Green; second, Mr. M. Robinson, Heston.

Mares and Foals (for general purposes).—First prize, Mr. A. H. Johnson, Manor House, Gunnersbury.

Fillies (for general purposes), foaled since the 1st of January, 1855.—First prize, Mr. C. Webster, Uxbridge-common.

CATTLE.

Bulls, calved previously to the 1st of January, 1855.—First prize, Baron Lionel de Rothschild; second, Mr. Charles Webster, Uxbridge.

Bulls, calved since the 1st of January, 1855.—First prize, Mr. Henry Strafford, Dudding Hill Farm, Willesden; second, Mr. C. Webster, Uxbridge.

Cows, in milk or in-calf.—First prize, Mr. Henry Strafford; second, Mr. C. Webster, Uxbridge.

Heifers, in-milk or in-calf, under three years old.—First prize, Mr. H. Strafford; second, ditto.

Heifers, calved in 1856.—Second prize, Mr. H. Strafford.

Cow Calves, calved in 1857.—First prize, Baron Rothschild; second, ditto.

SHEEP.

Down Rams of the Hampshire breed.—First prize, Mr. H. P. Baxter, Southall Green; second, Mr. A. H. Johnson, jun., Hanger Hill.

Down Ewes of the Hampshire breed, having produced lambs in 1857. First prize, Mr. C. Eley, Beavor's Farm; second, ditto.

Down Rams.—First prize, Mr. C. Eley.

Down Ewes, having produced lambs in 1857.—First prize, Mr. C. Eley; second, ditto.

Down Ewe Lambs, bred by exhibitor.—First prize Mr. C. Eley.

Rams of any other breed.—First prize, Mr. C. Eley; second, Mr. H. P. Baxter.

Ewes of any other breed, having produced lambs in 1857.—First prize, Mr. C. Eley; second, Mr. H. P. Baxter.

Ewe Lambs of any other breed, bred by exhibitor.—First prize, Mr. H. P. Baxter; second, ditto.

PIGS.

Sows of a large breed.—First prize, Mr. Charles Eley, Beavor's Farm, Hounslow; second, Mr. Henry Strafford, Dudding Hill Farm.

Sows, of a large breed, under six months old.—First prize, Mr. Edward Haynes, Hammond's Farm, Stanwell.

Sows, of a small breed.—First prize, Mr. H. Strafford, Dudding Hill Farm; second, Mr. A. H. Johnson, Hanger Hill.

Sows of a small breed, under six months old.—First prize, Mr. Henry Strafford, Dudding Hill Farm.

LONG SUTTON AGRICULTURAL ASSOCIATION.

STEAM-PLOUGHING.

The chief feature of the twenty-first annual meeting of this Society, held on Wednesday, Oct. 14, was the trial of Fowler's Steam Plough, Hansom's Revolving Potato-digger, and other field machinery, upon the farm of Mr. John Clarke. On this occasion the steam-plough consisted of a perfectly new improvement upon that exhibited at Uppingham, Bedford, &c., the windlass being adapted to any ordinary portable engine, instead of requiring it to be mounted on a frame and fitted with winding-drums underneath. The engine is simply placed between two beams of the windlass-frame, like a horse in a pair of shafts, and the windlass hauls itself and the engine forward along the headland so as to keep opposite its work. The plough, anchorage, and arrangement of ropes, are similar to those previously shown. As the new apparatus had never been tried before, a great many stoppages occurred, and much time was lost in adjusting the mechanism, owing to the men being unaccustomed to it; so that the carefully instituted experiments of the judges (Mr. Dring, of Claxby, Lincolnshire, Mr. Robert Coe, of Tilney, Norfolk, and Mr. John Algernon Clarke, of Long Sutton), were unfortunately deprived of the value they would otherwise have had. Another great disadvantage was the uneven surface of the ground, which was a clover-ley roughly eaten off, and lying in four-yard stetches, with high ridges and deep furrows, whereas the plough was adapted only for flat or one-way work. The implement was not in good order, and the soil being wet and stiff from the late heavy rains would not scour the ploughs. However, three furrows at a time, each 10 inches wide and 6½ inches deep were turned over, at a speed of fully two miles per hour. In order to test the power required for the work, the draught of various horse-ploughs, similar in breadth of share and length of mould-board to those of the steam-implement, was taken in the same field by the dynamometer, and deducting the draught of the ploughs "empty" from that when in work, it appeared that the cutting and turning of a furrow of the dimensions stated required a draught of 20 stones. That is, the work done by the steam-plough, independently of its own weight and friction, may be taken at 7½ cwt. for the three furrows. The draught of the implement when out of work, although weighing 24 cwt., was found to be only 3 cwt. The field being 236 yards long, the length of rope out at once was 472 yards, and the draught of this over the ground was 3 cwt.; but as more than half this length was supported upon friction-rollers, the draught of the rope altogether could not exceed 1½ cwt. The total draught, then, of the implement turning three furrows, and of the rope, amounted to 12 cwt. An interesting comparison may here be made. The draught of the horse-ploughs (Ransome's iron one), drawn empty down an open furrow in this moist soil, was no less than 1¼ cwt. each, or 4½ cwt. for three ploughs, so that the draught of the steam-implement, together with its 472 yards of rope, was just equal to that of horse-ploughs taking the same number of furrows, a result much more favourable to the steam-plough than we should have expected, but which is easily explained by remembering that the whole weight of each horse-plough sledges upon the sole, share, and heel of the mould-board, while the steam-ploughs are balanced, and their entire weight carried upon a pair of large carriage-wheels having patent axles. Had the ploughs or the steam-implement been in better trim, a still more favourable result would have been arrived at.

We now come to the estimation of the power employed. The engine was of the same dimensions as Clayton and Shuttleworth's eight-horse power, stated to be of eight-horse power at 45lbs. pressure, and worked up to 50lbs. pressure. In 2¾ hours, the coal burnt was 14¼ stone, equivalent to 72lbs. per hour; and, reckoning one-horse power to consume 6lbs. per hour, the power at which the engine was working will be about twelve-horse; but so much steam was blowing off, that we can hardly take it at more than eleven. The power engaged in propelling the implement and rope—being 12 cwt., at 2 miles per hour—is equivalent to about seven mechanical horse power; so that the remaining four-horse power represents the force absorbed in overcoming the friction and resistance of the moving parts in the engine and winding apparatus, in shifting forward the anchorage, etc.

As to the extent of land ploughed per hour, no satisfactory data could be obtained, owing to the frequent stoppages incidental to first trials of machinery. Thus, in 2¾ hours, more than 40 minutes were entirely lost. Time was also wasted in reversing the gear of the windlass, partly from a misarrangement of one of the movements, partly from the novelty of the machine to the workmen, and partly from the hindrance of bystanders. The average time of 22 "changings at the ends" was 1½ minutes, but was sometimes effected in 1 minute, thus making a loss of 11 minutes. Again, the engine and windlass were not shifted forward whilst the plough was in motion (as might very well have been done); and there were 5 shiftings, taking up 4 minutes each time, or 3 minutes longer than the simple reversing of gear required; thus losing 15 minutes more. Thus we have, in 2 hours 46 minutes, no less than 66 minutes which may be considered as unnecessarily wasted. In the 1 hour 40 minutes really necessary to be occupied in the work, the area ploughed was only 3 roods 28 perches, or 5½ acres per day of 10 hours. Had the ploughs been sharp and in good order, a considerably greater breadth would have been turned over.

The foregoing figures cannot be regarded as more than approximations to correctness; but, in the absence of proper large dynamometers (which the R.A.S.E. might, but do not seem inclined to, use in testing steam cultivators), they are the best obtainable on the occasion, and are useful items of information, as far as they go. The expenses we will not enter upon until a better trial gives us another opportunity for investigation.

There were many hundreds of persons present to view the operations (a charge for admission to the field being made by the Society, to defray the heavy expenses); and the universal opinion appeared to be that, when this new machinery got into right working, land would be well and economically ploughed on this principle.

Hansom's patent revolving potato-digger gave great satisfaction, also a wheat and general crop horse-hoe, with a movement for instantaneously altering the dip of the hoe-shares; and a set of iron seed-harrows, invented and manufactured by Mr. Garner, of Spalding; a ten-horse engine, by Ruston, Proctor, and Co., of Lincoln; an eight-horse engine, by Tuxford and Sons, of Boston; Coleman's cultivator; Ransome's pony-plough, of exceedingly light draught; Thornsby's drill, etc., etc., attracted considerable notice; these and other implements being all exhibited at work.

The ploughing match was unusually large; and there was good competition in most of the numerous "classes" for premiums to labourers.

The dinner took place at the Bull Inn, Long Sutton. George Prest, Esq., of Sutton Bridge, took the chair, supported by A. Wilson, Esq., M.P.; W. Skelton, Esq., Sutton Bridge; R. Ransome, Esq., Ipswich; Rev. H. Lee Bennett, Lutton; R. Caparn, Esq., Holbeach; J. Algernon Clarke, Esq., Long Sutton; Mr. Fowler, &c. Thos. Peel, Esq., of Long Sutton, presided at the second table. Mr. John Clarke and Mr. John Swain officiated as vice-chairmen.

After the usual toasts, Mr. J. A. CLARKE rose to propose "Success to Steam Cultivation and Mr. John Fowler." He said they must all feel in these times that there was a great demand for something new. The minds of men, as well as their physical energies, were taxed to produce something new. Now that day they had had it. He did not allude to the dinner—that was nothing new; but he alluded of course to the steam plough. They had a gentleman there on that occasion—Mr. John Fowler—of whom he should say more if he were not present, but who, he was sorry to add, would be obliged to leave them in a very few minutes; and he was sure they must all wish to hear from that gentleman's own lips some of the results of his enterprise and exertions in bringing steam-power to bear upon the cultivation of the soil. Before sitting down, however, he (Mr. Clarke), as one of the judges, might be permitted to say that the experiments they had made that day in regard to weighing coal, measuring land, taking the time of work, &c., in connection with the steam-plough, had been impeded by the novelty of the apparatus. That being the first day of the trial of the machine, the observations of the judges were so obstructed that he did not feel called upon to state the results at which they arrived; in fact, those results were valueless. But they had all observed that the plough advanced at the rate of two-and-a-half miles per hour; that it had taken three 10-inch furrows, and could have taken four if the machinery had been in proper order; and that it had gone 6 or 6½ inches deep. He could not say that the work had been done well; but at the same time they must all see that had the implement been in proper order, there was great power and capability in it. And he was sure they would all believe him when he said that at Uppingham last week he saw ploughing done by steam in the most beautiful manner, and it was done at the rate of one acre in one hour. It was not the same implement that was used on that occasion, but one upon the same principle. As Mr. Fowler had only a minute or two to stay, he gladly sat down to make way for him. The toast was drunk with great enthusiasm.

Mr. FOWLER said it gave him great pleasure to have to respond to the toast last given. He believed it was the first time such a toast had been proposed at any agricultural meeting. "Success to Ploughing" had often been proposed; "Success to Agriculture" was a common toast; but "Success to Steam Cultivation" was a recognition of the principle of steam cultivation. It gave him additional pleasure to respond to the toast because he felt that it was not by any means personal. He had done something, and he hoped considerable, towards solving this great problem; but he had many co-workers and assistants in that direction. There were some whom many would consider rivals, but he regarded them as co-workers, who were equally interested in the toast with himself—Mr. Boydell, Messrs. Crosskill, and others. Three or four of them were all endeavouring, to the best of their ability, each in his own way, to solve this great problem. That its solution was close at hand he had no hesitation in saying was his full belief. The result of that day's trial was pretty much the same as if they were to take a new engine of the best principle, and set it on the first day it left the workshop to run an express train from London to Manchester; the train would be sure to be late at its destination. So it had been with the steam-plough that day. The machine had been made within a fortnight, and it was not in such a condition for work as the one exhibited last week at Uppingham. Had the machinery been older and ready for use, the result would have been very different. It had been his wish to show the best mode of applying an ordinary portable engine: that was a very important matter, because there were already so many such engines in existence. The failure of that day they attributed to its right cause, and therefore he would say no more about it. As regarded the results of steam cultivation, he had no hesitation in saying that his experience during the last twelve months clearly showed that they must be of the highest importance. On heavy clay land, the difference between the use of steam and of horses was beyond calculation. From the manner in which the last toast was given and received, he had great pleasure in believing that they were fully prepared to receive steam as a cultivator as soon as it was ready to their hands. But a very short time would elapse before that day arrived. So far as his own plans were concerned, they required but little amendment, and he believed would receive but little amendment. Both Mr. Boydell and Mr. Crosskill had brought out machines which, under certain circumstances and on certain kinds of lands, would achieve very important results; and on their behalf, as well as his own, he had great pleasure in thanking the company for the very cordial manner in which they had received this toast.

Mr. Aveling, being called upon, stated that last April he ploughed about 100 acres with Fowler's steam-plough. The land was exceedingly heavy; but when they had a good day's work, they ploughed 8 acres in ten hours; and then the expense did not exceed 5s. per acre. That was not a statement made by guess; there were numerous farmers who kept an account of the work, and this fact would be borne out by any of them—that the cost did not exceed 5s. per acre when they got on well (Hear).

A Voice.—What depth did you go?

Mr. Aveling.—We never plough shallow in Kent—never less than 8 inches.

Mr. Fowler.—And when you did not get on well, it was owing to imperfect machinery.

Mr. Aveling.—We are very anxious in Kent to have the steam-plough. I hope we shall very shortly get it, for our land is much heavier than it is here; and I am certain that if we could plough it by steam, we should grow one-third more produce per acre.

Mr. R. Young (Walsoken), proposed "The Visitors," coupling with the toast the name of Mr. Ransome, of Ipswich—a name which had long been "a household word" in the agricultural districts.

Mr. R. Ransome said he felt that the house which he represented (as the senior partner of it) was highly honoured, by the manner in which they had received him that day. He looked upon meetings of this kind as having a very important bearing upon the scientific character, the agricultural character, and the welfare of the labouring classes of this kingdom. It was at meetings like this that they had an opportunity of hearing important and valuable suggestions; it was to meetings like this—speaking for the moment as a manufacturer, and speaking alike for some of the gentlemen in the same character who were then present, and with whom it was always a pleasure to the firm with which he was connected to associate in honourable rivalry—it was to meetings of this kind that they were very much indebted for the progress they had made in the various inventions which had been the lot of their house. They are, in short, mainly *your* inventions. Without you, they would never have been brought to the perfection which they have been. And looking back to the introduction years ago, of the drill—a simple instrument, and now in general use upon the land; looking at the progress which even that simple instrument (the plough) has made, simple in its original construction, and even to the present day a simple instrument, but greatly improved by the suggestions and by the care which you have occasionally bestowed upon it; then, again, there is the thrashing machine—you are all aware of the many difficulties it had to encounter, the prejudices, the discouragement; and now who among you would be without a thrashing-machine? So we may go on to the reaping-machine, which has nearly attained perfection, and which is calculated to work very beneficially for the agriculture of this country. And now looking from the little pony plough which you saw to-day working with a single pony—looking from that to the great giant plough which Mr. Fowler has introduced, and with whom we are most happy to be associated, because we have found that that gentleman having "set his hand to the plough" is not inclined to look back; that having spent one thousand pounds has another ready, and another, and another to the extent of many thousands already, to produce that implement which you have seen to-day. Looking at all these, I do ask you to sympathise with the manufacturer, and especially with the inventor. You have seated at the bottom of the table Wm. Mawby, whose name I may mention as being as well known almost as his masters' are in connection with the manufacture and invention of improved implements. For years—not a few, but many—toiling incessantly, under great discouragements, I am proud to confess it here, as one of his employers, that we rejoice in offering to him the tribute which is his due. He will not take offence, I am sure, if I say that I do like to see in this country the progress of a labouring man, risen by his own exertions, by his own character, to the highest position he can occupy, short of being a partner in our business. If I say short of being a partner, I do esteem him, and all the workmen in our employ, partners in our business; I look upon them gratefully as means to an end. And so, gentlemen, when I saw your labourers busy hedging and ditching, busy in various occupations of agriculture, kindly noticed by the master of the farm and by the committee who have them in view for prizes this evening, I did think that they are all links in one great chain. It is to the labourer we are indebted for our comforts: it is the labourer that must carry out our own ideas. It is to the working man that we are indebted for perfecting that from which we reap a benefit, and which we enjoy. But if we look to every class in this kingdom, we shall find that there is not one distinct from the other: we are all united in one almost imperceptible link. And when I have the honour to attend a meeting like this, you will excuse me saying I feel as if I were one with you. It is an excessive pleasure, with the earthly distinctions which are justifiably kept up in this kingdom, and which are not without their advantage, I do feel that it is an excessive pleasure sometimes to sit as an equal at the festive board with gentlemen of high degree. And there is no reason why we should not. If we are united together for one good, industrial, beneficial purpose, why should we not, like the crew on board a large vessel, feel that we are one crew, and that we have one common object on the voyage we are going? My friend Fowler and I do not come here by constraint—not simply as men interested on our own account. I trust you will credit me when I say we have a measure of disinterested feeling. But we are interested in the success of the important machine you have seen to-day. We are interested in a pecuniary point of view; we are interested as a matter of business. But the very ground of our interest being successful is your interest. If we could not make it your interest to make it our interest to manufacture the steam-plough, we should not succeed. Therefore, again I prove, I think almost logically, the partnership interest which we all have as members of one community. I would that such meetings as this were held even oftener than they are—that some meeting of the kind might take place in every parish. I feel indebted to you for receiving me as you have done on this occasion. I do feel that it has been a privilege to be with you: it has made me acquainted with many gentlemen who knew me by name, though not in person; and I will conclude by saying that I am unable to express the feeling of gratitude I have to you.

Mr. Wm. Mawby followed, with an address of considerable ability and humour. He stated that in January, 1856, he attended a lecture on steam cultivation; and he then heard it stated that £159,000,000 a year was expended in agricultural pursuits, and that the agriculturists consumed a quarter of the produce of the land. On hearing this, he thought it was time something should be done to improve the present system. It was also stated that it was of no use going on the land with a less power than a 40-horse steam-engine. He thought that if it was not to be done without that, it was useless trying it at all. At present, a ploughman had to walk eleven miles to plough an acre of ground, and not with the most comfortable shoes. They would excuse him, but the question of agricultural labourer's shoes ought to be considered. He thought the Royal Agricultural Society of England should offer a prize of £50 for the best pair of high shoes. Remarking on the footprints he had noticed on land ploughed by horses, Mr. Mawby said he had calculated that nearly 150,000 reservoirs for stagnant water were thus produced on a single acre. He had always understood that those reservoirs were very injurious, and that a quantity of bad grain was always grown there. Now farmers were always careful to select their seed, and why should it not grow all alike if it were ploughed alike and treated alike? With the steam-plough they would have no reservoirs for stagnant water, and the men instead of "driving their teams afield," would ride like gentlemen. After mentioning an instance in which the produce of a piece of land had been almost doubled by the use of Mr. Fowler's plough, the speaker concluded by expressing his belief that the time would come when all the chief operations of agriculture would be performed by steam.

Mr. A. Caparn proposed the health of the two gentlemen who now represented that division of the county in Parliament.

Mr. Wilson, M.P., in reply, said: Having received, in common with my friend Sir John Trollope, an invitation to be present at the annual meeting of the Long Sutton Agricultural Society, I am here, I may say, as a visitor; and it is solely in my character as a visitor that I now presume to address you. I extremely regret that my right hon. friend is not here to return you thanks, in common with myself, for the distinguished and kind way in which our healths have been received; and I concur entirely in the remark of Mr. Capern, that nothing but an illness of a serious description, which has occurred to one of his family, would have prevented him being present on this occasion. I have ever heard him speak of the agricultural meetings held here as days which are to him sources of the greatest gratification. I need not tell you that this is the first time I have had an opportunity of being present; but I should be wrong if I did not express to you the high gratification which I have derived from this meeting—a gratification, I may say, that has been increased in great part by the exhibition of the various implements witnessed on the ground this day, implements various in their character, but all tending very considerably towards the prosperity of agriculture. But there is one instrument which we have all seen with the greatest interest, and which has been the cause, I believe, of this meeting being more largely attended on this occasion than formerly—an instrument which has made a stride, and a very powerful stride in advance, to the perfection of agriculture, and one which you have heard described, not only by the inventor, but also by one of the workpeople, who, from his own account, has brought it to its present state of advancement, for I cannot say at present perfection, judging from the remarks of one of the gentlemen who spoke this evening. But from all I have heard, there seems every prospect of that implement being brought to perfection and into general use, as tending not only to the saving of horse labour, but also to the increase of the produce of the land, which we heard to-day would be one result of the employment of the steam plough. A remark was made in the field to-day that one of the great advantages of steam would be its saving the agriculturist from the heavy incubus of the maintenance of horses. I may say that this is one of the greatest expenses to which the farmer is liable; and if this instrument is brought to the perfection which we hope to see it attain in a few months, it will have the effect of displacing, to a great extent, horse labour. But I hope it will not have the effect of displacing the work of the labourer. It is allowed on all hands that labour, well directed, is remunerative both to employer and employed:

> "It is twice blessed:
> It blesseth Him that gives and Him that takes."

The speeches that took place in the earlier part of the evening having occupied more time than was anticipated—I can say for myself how gratified I was with them—I shall not detain you longer on this occasion, except to say that since I entered the room I have been asked to propose a toast. I only wish it had fallen into more abler hands, because I feel how incapable I am of doing it the justice it deserves and requires. It is "The health of Mr. Wm. Skelton," one of the oldest members, if not *the oldest*, of this association—an association which has existed now for upwards of twenty years. Mr. Skelton has filled the office of president in a most distinguished manner, and is a man honoured as a neighbour, respected as a friend, and esteemed by all.

Mr. Skelton responded.

"The health of the Judges," "The Labourers," and several other toasts were subsequently given, the conviviality of the evening being considerably prolonged.

THE CATTLE DISEASE.

Sir,—Having observed in a recent publication of your morning paper a complaint of the prevalence of pleuro-pneumonia, and the evident incapacity of farmers in general to treat with it, I beg leave to submit to your notice a recipe, subjoined, which I had some few years ago from Mr. Ridgway, of Fairlawn, Kent.

If the publication of this recipe can benefit the public in the least, I am perfectly satisfied that it would please Mr. Ridgway quite as much as your obedient servant,

Tandridge, Oct. 14. COTTENHAM.

PLEURO-PNEUMONIA.

Epsom salts..	1 lb.
Sulphur..	3 oz.
Ginger	½ oz.
Spirits of turpentine	3 table-spoonfuls.

If it does not act freely in six hours, repeat the dose, and when it has acted freely, give—

Powdered nitre	3 drachms.
Emetic tartar	1 drachm.
Digitalis	½ drachm.
Nitrous ether	3 table-spoonfuls.

And give two quarts of gruel three times a-day.

—Morning Post.

BRIDGNORTH AGRICULTURAL ASSOCIATION.

The fourth annual meeting of the above association was held on Thursday, Oct. 8, under the presidency of the Rt. Hon. the Earl of Dartmouth, and the vice-presidency of J. Pritchard, Esq., H. Whitmore, Esq. (the two members for the borough), and G. Pritchard, Esq. This Society is progressing steadily. The total amount given in prizes is very large; there are also three silver cups given as prizes, value 10*l.* 10s., one presented by Messrs. Griffin and Morris for the best crop of swede turnips grown from their manure, taken by G. M. Kettle, Esq , of Dallicott-house ; a second, also value 10*l.* 10s., presented by Messrs. Pitt and Simpson, for the best crop of swedes grown from their manure, taken by Mr. W. H. Davis, of Harrington ; and a third, of the value of 5*l.* 10s., awarded to the exhibitor of the best collection of eight or more pens of poultry, taken by Mr. G. C. Peters, of Birmingham. In addition to these prizes a sum of 25*l.* was also subscribed to be awarded for extra stock ; this sum being 15*l.* more than had been awarded for the like purpose on any previous occasion.

The show of cattle was exceedingly good, but was chiefly confined to specimens of the Hereford breed. There were, however, a few pens of short-horns exhibited by Mr. J. Price, of Featherstone, near Wolverhampton. Amongst these was a fine roan bull, "Musician," aged 6 years, which was highly commended by the judges ; a pair of yearling heifers, "Queen Elizabeth " and "Vapour," which took the first prize in class 6, and which also this year took a second prize at Stafford, besides being highly commended at Rugeley ; and two milking cows, "Princess " and "Oak Apple," which were highly commended. The former was a fine roan beast, and took a 5*l.* prize at Stafford this year, where she also won a sweepstake of 3*l.* 13s., and the silver medal. She was highly commended at Rugeley. These were nearly all the short-horns on the ground ; but many farmers express an opinion that it would be well to form a class for this breed, as they cannot be shown with any hope of successfully competing with the Herefords. The bull exhibited by Mr. Hill, of Cound, that won the first prize, is a splendid specimen of the Hereford, remarkably thick and short-legged; Mr. R. Haynes' beast, which took the second prize, was also a splendid beast. Amongst the yearling steers were a pen of two, exhibited by Mr. T. Instone, of Wenlock, very fine animals, age under two years ; and another pen exhibited by Mr. Meire, of Brockton, the beasts being 1 year and 11 months old. Mr. Meire was also a successful competitor amongst the two-year-old heifers, taking the first prize. Mr. George Pritchard, of Astley Abbotts, exhibited a splendid pair of Hereford yearlings, which took the second prize for animals of that description : he also took the first prize for a fine fat cow. There were some fine specimens of grass-fed cows, Mr. J. Meredith, of Underton, being first in the breeding of this kind ; and J. Pritchard, Esq., M.P., of the Hill-farm second.

The sheep were remarkably good, both in quantity and quality. The competition amongst the Southdown, Shropshires, or grey-faced sheep was not very great ; but what were there were good, and Mrs. Darby's pen, from Stanley, deservedly took the first prize. Mr. H. Smith, jun., of Newhouse, Sutton Maddock, appears to be an excellent breeder ; he took the first prize for yearling rams, and both prizes for a pen of five yearling ewes. The last were fine specimens of Shropshire ewes, which are getting into well-merited reputation. The Leicesters were numerous, and are perhaps more bred at the present time on account of wool retaining its high price in the market. There were some fine rams; Mr. J. Beach, of The Hattons, and Mr. T. Smith, of Stableford, being successful exhibitors in this class. G. M. Kettle, Esq., of Dallicott, and J. M. Pocock, Esq., of Chettan, took the prizes for pens of five ewe lambs of every breed.

There were very few horses. A fine cart stallion, "Regulator," exhibited by Mr. E. Bache, took a prize ; and Mr. Beddoe, of Presthope, Much Wenlock, exhibited a fine cart mare and foal, which took a prize. The prize for the cart filly was taken by the Earl of Dartmouth, for a fine mare got by the "Shropshire Friend."

The show of pigs was also good ; and those exhibited by the farm labourers were remarked for their fine appearance. J. Pritchard, Esq., M.P., took the prize in this class for an excellent sow with a litter of 12.

REPORT OF THE JUDGES FOR TURNIPS AND ROOT CROPS.

The following is an abstract of a very able and elaborate report, submitted by Mr. Edward Davies and Mr. John Broughall, to the Judges for turnips and root crops :—

FOR FARMS OVER 200 ACRES.

Prize of £8 to Mr. Thomas Bache, Green House, for 20 acres of swedes and mangolds, planted the first week in May, and manured with 8 cartloads of farmyard and 3½ cwt. of artificial manure, at a cost of 8s. 1½d. per cwt. ; 22 a. of swedes, planted the second week in May, manured with 5 cwt. of artificial manure, at a cost of 8s. 1½d. per cwt. ; and 3 a. of turnips, planted early in June, manured with 5 cwt. of artificial manure, at a cost of 8s. 1½d. per cwt.

Prize of £4 to Mr. W. H. Davies, of Harrington, for 5 a. of swedes, planted June 6th to June 9th, manured with 8 cwt. of Griffin and Morris's artificial manure, at a cost of 8s. per cwt. ; 5 a. of swedes, planted same dates, manured with 5 cwt. of Pitt's artificial manure, at a cost of 8s. 9d. per cwt. ; 4 a. of mangolds, planted same date, manured with 4 cwt. of Upper Peruvian guano, at 12s. per cwt., and 1¼ cwt. of Bradburn's artificial manure ; 4 a. of swedes, planted same date, manured with 4¼ cwt. of Upper Peruvian guano, at 12s. per cwt. ; 29 a. of swedes, planted June 10th to 18th, manured with 4¼ cwt. of Upper Peruvian guano, at 12s. per cwt. ; and 14 a. 2 r. of swedes and turnips, planted June 20th to 24th, manured with 4¼ cwt. of Upper Peruvian guano, at 12s. per cwt., and farm yard-manure.

Prize of £4 to H. C. Taylor, Esq., for 10a. 3r. of swedes, planted last week in May and first week in June, manured with 4½ cwt. of Griffin and Morris's artificial manure, at 8s. per cwt., and 12 one-horse-cart loads of farm-yard manure ; 1a. 2r. turnips, planted second week in June ; 1a. 2r. turnips, planted last week in July, manured with 10 one-horse-cart loads of farm-yard and 4 cwt. of Griffin and Morris's artificial manure, at 8s. per cwt. ; 1a. 1r. cabbage, planted second week in June, manured with 4½ cwt. of Griffin and Morris's artificial manure, at 8s. per cwt., and 13 loads of farmyard manure ; 2a. of mangolds, planted last week in April, manured same as turnips; and 1a. carrots, planted last week in April, manured with 10 loads of farm-yard and 4 cwt. of Griffin and Morris's manure, at 8s. per cwt.

FOR FARMS UNDER 200 ACRES.

Prize of £2 to Mr. G. Broughall, Lea, for 5a. swedes, planted June 1st, manured with 6 cwt. of Perry's artificial manure, at 7s. per cwt.; 5a. swedes, planted June 1st to 9th, manured with 3½ cwt. of Peruvian guano, at 14s. 3d. per cwt.; 8a. swedes, planted from June 9th to July 11th, manured with 3 cwt. of Peruvian guano, at 14s. 3d. per cwt.; 8a. turnips, planted from June 9th to July 11th, manured with 4 cwt. of Lawes' superphosphate; 2a. turnips, planted from June 9th to July 11th, manured with 3 cwt. of Peruvian guano, at 14s. 3d. per cwt.; 3a. swedes, planted from June 9th to July 11th, manured with 10 cartloads of farm-yard manure and 3 cwt. of Peruvian guano, at 14s. 3d. per cwt.; and 3a. turnips, planted from June 9th to July 11th, manured with 2 cwt. of Lawes' superphosphate and 10 cartloads of farm manure.

Silver cup, given by Messrs. Griffin and Morris, to G. M. Kettle, Esq., Dallicote, for 5a. swedes, planted second week in May, and manured with 6 cwt. of Messrs. Griffin and Morris's artificial manure, at 8s. per cwt.

Silver cup, given by Pitt and Simpson, to Mr. W. H. Davies, Harrington, for 5 acres swedes, planted June 8th, and manured with 5 cwt. of Pitt's artificial manure at 8s. 9d. per cwt.

Mangold planted the early part of May were generally good, but those planted the latter end of May were small. Swedes planted early in May were far advanced to maturity, and mildewed, and not likely to make so heavy crops as those planted early in June; those planted later in June were very small, but very growing, and free from mildew. Turnips planted about the 15th to 20th June were generally good, and those planted about the first week in July were much damaged by caterpillars and flies, and in some instances whole fields were destroyed. Carrots very good; and the Committee feel much obliged for the candid manner competitors gave us information, but few kept any exact date as to the time of planting.

The following gentlemen officiated as judges: John Wilson, Esq., Ashton Hall; Henry Smith, Esq., New House; Mr. Sarn, of the Bache; Mr. Parsons, Tugford. And for turnips and root crops: Mr. Edward Davies, Wormdale; Mr. John Broughall, Sutton.

SCOTTISH ARBORICULTURAL SOCIETY.

The fourth annual general meeting of this society was held on Thursday, in the Society's Rooms, 6 York Place, when there was an unusually large attendance of members from all parts of the country. Mr. James Brown, Wood Commissioner to the Earl of Seafield, occupied the chair. On this occasion forty-one new members were admitted.

A lengthy and valuable address was delivered by the CHAIRMAN, who reviewed the past history of the Society, and pointed out the means by which its utility might be promoted in future.

On the motion of Mr. M'CORQUODALE, seconded by Mr. GARDNER, thanks were voted to Mr. Brown for his able address, which was calculated to exercise a highly beneficial influence on the future prosperity of the Society.

The office-bearers for the ensuing year were elected as follows:

President.
The Right Hon. the Earl of Ducie.

Vice-Presidents.
Right Hon. T. F. Kennedy of Dunure.
Sir John Villiers Shelley, M.P.
Sir John Ramsden, Bart., M.P.
John I. Chalmers, Esq., of Aldbar.
Mr. W. M'Corquodale, Scone Palace.
Mr. James Brown, Wood Commissioner to the Earl of Seafield.

Secretary.
Mr. James Alexander, Nurseryman, Leith Walk, Edinburgh.

Vice-Secretary.
Dr. George Lawson, Demonstrator of Vegetable Histology to the University.

Treasurer.
Mr. John Anderson, Nurseryman, Perth.

Auditor.
Mr. Thomas Methven, Nurseryman, Stanwell Lodge, Edinburgh.

General Committee.
Mr. Thomson, Chopwell Wood.
Mr. Thomson, forester to the Earl of Stair.
Mr. Walter Sang, nurseryman, Kirkcaldy.
Mr. Balden, forester to Lord Blantyre, Lennoxlove.
Mr. Cowan, forester, Arniston, Gorebridge.
Mr. J. Black, factor, Robertland House, Stewarton.
Mr. Robert Philip, forester, Aldbar, Brechin.
Mr. James Smith, forester to the Earl of Moray.
Mr. M'Laren, forester to the Earl of Hopetoun.
James Smith, Esq, factor, Dunglass.
Mr. Dickson, forester, Charlton, Fife.
Mr. E. J. Ravenscroft, 1 George IV. Bridge.
Mr. P. S. Robertson, Golden Acres Nursery.
Mr. Gardiner, forester, Eglinton Castle.
Mr. Rutherford, forester, Buckden.

Mr. Thomson, Chopwell, and Mr. Philip, Aldbar, having been requested to examine the essays sent in competition for the various prizes offered by the Society, presented a detailed report thereon, in accordance with which it was agreed to award prizes as follows:

First Prize (Silver Medal), to Mr. John Thomson, Culhorn, for Essay on the Reclamation of Neglected Plantations. Second, to Mr. James White, Wood of Park, Glenluce.

First Prize (Silver Medal), to Mr. John M'Leod, North Broomage, near Larbert, for Essay on the Management of Coppice Woods and Cutting of Coppice Bark. Second to Mr. James White, Wood of Park.

First Prize (Silver Medal), to Mr. J. G. Thomson, Culhorn, for Essay on Planting on Moss Lands.

An Essay on the Best Method of Book-keeping for Foresters, with Examples, having been submitted to Mr. Laing, accountant, a report thereon was read, and in accordance with its recommendation, the Society's silver medal was awarded to the competitor, Mr. William Thomson, Chopwell.

Mr. Philip, Aldbar, presented a paper on the General Management of Plantations.

It was agreed that, for the ensuing season, prizes should be offered (open to members and others) for the best essay on each of the following departments of practical forestry, the essays to be in all cases founded on the experience of the competitors, and to be sent to the secretary not later than 1st August, 1858:

I. On the Dry-Rot and other Diseases in Larch and Spruce (Medal).
II. Entomology (Medal).
III. Introduction and Cultivation of the newer Coniferæ and other Forest Trees, with special reference to the Climate of Great Britain and Ireland (Medal).
IV. Drainage and Fencing (Medal).
V. Thinning and General Management (Medal).
VI. Management of Home Nurseries, with special reference to the preservation of the best varieties of trees (Medal).

Further particulars as to the essays will be furnished by the secretary on application.

Mr. Gardiner, Eglinton Castle; Mr. Brown, Grantown; and Mr. Balden, Lennoxlove, were appointed judges of the essays for the ensuing year.

A letter was read from John I. Chalmers, Esq., of Aldbar, in which he called attention to the importance of ascertaining the origin of the seeds of the best larch timber growing in this country, and gave details of some fine larches possessed by Mr. Chalmers. The attention of the members was called to this subject, and such as possessed information were invited to communicate the same to the secretary, in order that it might be circulated among the members.

Thanks were voted to the Chairman, and the Society then adjourned; the next annual meeting to be held at 6 York Place, Edinburgh, on the first Wednesday of October 1858.

After the meeting the members dined together in the Regent Hotel; Mr. Brown in the chair, and Mr. M'Corquodale croupier.

THE WHEAT PLANT.

CHIDHAM WHEAT.

From the following paragraph, which appeared in the *Mark-lane Express* in the autumn of 1841, and which in that paper formed a portion of the proceedings of the Royal Agricultural Society of England, the credit of having raised this variety belongs to Mr. Postlethwaite, of Chidham, Sussex—

"H. Hollist, Esq., of Ledsworth, Sussex, presented to the Council a specimen of heavy, clean, and fine Chidham wheat, as a thoroughly good sample for the market, the seed having been drilled on a light loamy soil on the 26th November, and the grain weighing 67lbs. per bushel, and expressed his willingness to supply small quantities to any of the members who were desirous to cultivate this variety of wheat. Mr. Hollist stated, in reference to the history of Chidham wheat, that it was probably known in other parts of the country by other names, but that in Sussex it was generally called 'the hedge wheat,' from the circumstance of an ear having been found twenty years ago on a hedge, by Mr. Postlethwaite, of Chidham, and excited his curiosity and interest in its cultivation. The specimen sent by Mr. Hollist was heavier than the prize wheat at Cambridge, but not so bright in its appearance, a difference he attributed to the state of the weather during its growth. Mr. Hollist having also found in his own experience the most decided differences in the result of trials on the growth of wheat arise from the slightest differences of soil and time of sowing with the same grain and in the same field."

Chidham wheat obtained the prize for the best wheat, given by the Royal Agricultural Society of England, at its Oxford and Cambridge meetings. The ear is symmetrically formed, the straw long, with grain of the finest appearance, and weighing heavier than any other variety cultivated in Britain. When the crop is luxuriant the chaff is often streaked with purple in the early stages of ripening, and large blotches of the same colour occasionally appear upon the straw. Notwithstanding all the seeming advantage possessed by this variety, it has not been found productive in East Lothian, where its career has been even more extraordinary than the fortunes of Mungoswell's wheat.

Same time, about 1829, Chidham wheat was introduced into East Lothian, from Ross-shire, by the late Mr. James Allan Balgonebarns, under the name of Ross-shire wheat. It soon obtained a trial upon some of the best lands, and became the subject of panegyric and remark in the newspapers of Edinburgh for several years afterwards; but being disliked by farmers for its meagre return of grain, and by bakers for its want of gluten in the flour, the name of Ross-shire wheat was soon unheard in the market-place.

In the autumn of 1838, Chidham wheat came into the possession of the late Mr. John Watson, Leith, under the name of Oxford prize wheat, and was sown upon the farm of Craigielaw, East Lothian. In the following year the produce, as seed wheat, obtained a premium, given by the United East Lothian Agricultural Society; and next day it was advertised by Cleghorn and Co., seedsmen, Edinburgh, as "Pearl Wheat"—a name happily chosen, and adroitly applied by the company's agent, the late Mr. Arthur. Premiums were also awarded to this wheat by the same Society in the autumns of 1840 and 1841. At this time the United East Lothian Agricultural Society made some inquiry into the origin of the Pearl wheat; and the following letter from Mr. Watson formed part of the correspondence on the subject—

"I am in receipt of your favour of this date, and regret that I have no means of knowing whether Pearl and Chidham wheats are the same variety. My opinion is they are not, as my friend the grower gave me a different name for the kind he sent me, and which in Scotland has been christened the Pearl."

From the weight and fine appearance in the grain, aided by advertising, Pearl wheat became extensively known, and was speedily introduced into almost every county in Scotland. But the inherent defects of the variety could not be removed by the influence of christening; the poor return of grain obtained by the farmers soon deprived the gem of its beauty; and a second time was Chidham, under the designation of Pearl wheat, discarded the farm, and cloaked in the market place with new names.

In the corn markets of the Lothians, Chidham wheat has been sold under the following names—Ross-shire, Oxford Prize, Pearl, Mummy, Talavera, Slate's Talavera Bell's, Golden Straw, English, &c., &c., including almost every county in the south of England, a number more than sufficient to puzzle the most experienced, and bring shame on the baptizers of seed-wheat. In a general view, no distinction ought to be drawn between the act of applying the same name to distinct varieties, and different names to the same kind of wheat—the impelling motive in both cases being in all probability avarice. In the case of Mungoswell's wheat, the names which have recently been applied to the variety may have been prompted either by love of money or of fame; and while uncertainty about the wheat continued, some of the baptizers may have acted in joke. But since the history of Mungoswell's wheat has been made known, and its individuality established, whoever distinguishes that variety in the market-place by their own name, the name of their residence, or by any other name than the real one, can have but little pretension to fair dealing.

By the existing regulations of the different corn exchanges, no deviation above or below standard measure is allowed to take place; and it would be well for the interest of the public to enforce adherence to the names of the kinds of grain. To the purchasers of seed a small measure is not so great an evil as an unsuitable variety; and to a certain extent the effects of the deception extend to the public. Were the market tickets which are now issued to contain the name as well as the quantity and weight of the variety exposed for sale, the purchasers would get the kinds they want, and, by the evidence of the market-book, be enabled to obtain redress for any loss sustained by the substitution of a wrong name. The addition to the ticket which has been suggested would effectually check the re-baptizing of the existing varieties of corn, besides producing many other advantages, while no fair dealer would be placed under any restraint. In cases where different species of grain or different varieties of the same species may have been mingled together, the sample might be written *mixture;* and when uncertainty about the name exists, the term *unknown* may be applied.

Haddington, Oct. 5, 1857. S. *(in the North British Agriculturist.)*

DR. VOELCKER ON FARM-YARD MANURE.

"When doctors differ, who shall agree?" is a well-known adage bearing upon the various contradictions that arise among leading men when engaged in scientific subjects, and more especially upon all those in which chemistry is concerned. Take, for example, the investigations of Davy, Liebeg, Way, Voelcker, and Lawes, and we find that they in their opinions as widely differ as do those great agricultural improvers, Smith, Huxtable, Kennedy, Caird, and Mechi. Take their present opinions, and compare them with those past, or with those of each other, and we shall find such discrepancies as to lead us but to echo the adage we have quoted.

If we view the soil only as a huge laboratory, in which the various ingredients that exist need only to be brought into action through the various combinations they may be made to produce, we shall only be pursuing the same course as the chemists before-mentioned have done. If we view the land as it presents itself to our notice in its natural character as the means whereby plants derive their support, when also assisted by tillage, and a rotation best qualified to effect the object, we shall so come at a means conducive more than all others to a favourable result. For it is such a principle, combined with the application of the means at hand, such as marl, chalk, lime, and the ordinary manure produced upon the farm, that our best practical farmers have invariably pursued, adopting, as they have termed it, the best *shift* of husbandry suitable to each of their respective localities. Further, if we look carefully to results, we shall probably find that they have turned out to have been the most profitable. Indeed, it is notorious that those who have acquired the largest fortunes by farming, are men who have pursued their object upon the principles long established and practised in the districts in which they have operated, rather than those who have reduced new theories to practice, which in many cases have led to their own injury or ruin.

Were we disposed to enumerate instances within our knowledge, in which experimentalists have failed in their attempts, we might have abundant opportunity of doing so. But it is not our intention invidiously to select any individual as having been especially unsuccessful, feeling that every one who strikes out a new path has much to overcome. And if he had even succeeded to show us a nearer and a better way, he would have still to encounter all the prejudices of those that have long followed the old one, and who might from habit have preferred their old rough path to the new and improved paved one.

We are induced to offer these remarks as bearing upon the subject of treating ordinary farm-yard manure, so far as the opinions of Professor Voelcker go, as set forth in the last number of the "Journal of the Royal Agricultural Society," and as at variance with the processes carried out by our best practical men, and upon which subject the Central London Farmers' Club lately had a most able discussion.

It has long been the practice of the farmers in the southern and eastern portions of the kingdom to carry out their manure, in the winter and spring, to the spot where it would be shortly afterwards required. To fully insure its decomposition, the heaps in most instances were turned over to induce fermentation, as it has invariably been found necessary, to insure neat cultivation, so to reduce the hard and woody portions of the manure to such a pulpy and soft state that plants might be enabled to readily appropriate them in their early stages of growth. After many years' successful experience in this way by farmers, they were at length told that by so doing the better portions of the manure would pass off during the time of the fermentation process taking place, and that it would be better to convey the manure at once direct from the farm-yard to the field in its new and undecomposed state, but that in either case it was absolutely necessary to have it incorporated with the soil immediately upon its application, to prevent any loss of its ammonia, or other constituent manuring properties, by exposure to the atmosphere. It has therefore been the practice of our best farmers to cover it with the furrow as soon as possible after having been carted to the field, not only as the best mode of application, but as the best means of securing the utmost amount of benefit.

Such management, according to Professor Voelcker, is quite useless. He states that in dung heaps under a state of fermentation, however excessive, that free ammonia is not generated except in the centre of the heap, where the heat is greatest, and where it has risen from 120 to 150 degrees Fahr.; and that it even then rarely escapes, except in very small quantity, as the external layers of the dung heap, where but little heat is generated, arrest and fix it in its course and endeavour to escape; that the strong smell emanating from dungheaps in a state of fermentation does not arise from the ammonia escaping, but is rather to be attributed to peculiar volatile organic combinations—to some sulphuretted and phosphoretted hydrogen and a variety of other gaseous matters, amongst which ammonia as a gas is only found in very minute quantities.

Upon the other hand, the learned professor attributes the greatest injury sustained by farm-yard manure to arise from its being exposed to the action of rain-water, especially in open yards or after removal to the field in heaps; and to obviate this, he recommends that the manure be carted immediately to the field, and incorporated with the soil—at all times a difficult task, and at the same time frequently a slovenly mode of application.

The point thus maintained by the learned professor's investigations, that manure does not become materially depreciated by fermentation if at the same time kept free from the action of rain-water, being the one which especially refers to the practice of most farmers, is after all found to be good practice chemically. So after fifty years' controversy, it now again becomes established that the practice of our farmers has been the right one, so far as the circumstances combine to produce a generally beneficial result. We therefore conclude that such practices as have been long pursued in a district are most likely to be the best, inasmuch as they have been proved through successive generations, and adopted as those that have been found to be the most successful and profitable.

A PLAIN FARMER'S VIEWS OF THE NEW THINGS IN AGRICULTURE.

STEAM CULTIVATION.

The first thing I shall advert to is the new principle set forth for the more effective and better culture of the soil through the aid of that almost omnipotent power—*steam.* This power is most wonderfully employed in every department of commercial and manufacturing industry, and why it should not occupy a very prominent and important part in agriculture I know not. Of course, it is as well adapted for all farm purposes, where the machinery can be stationary, as in the mill, the manufactory, or the steam ship. But the application of this power to till the soil is a very different thing, and the difficulties to be overcome are very great. This is very true. Well, now, just look at or into the progress of the plough—the common plough. Read "Ransome's Implements of Agriculture," or any of the Cyclopedias (Morton's, lately published); you will there learn what a supremely rude implement it was in its early days: it could merely scratch the surface—nothing more, and that indifferently. Look at it immediately before the palmy days of a Ransome or a Howard. Who does not recollect the "Scotch plough," the "Yorkshire plough," and others which became marked improvements upon the old implements? And it has only been by very slow and progressive steps, tested by practical men at our large agricultural gatherings, that the plough has attained the high standing it now occupies, *i. e.*, very near perfection; and the work performed by a skilful ploughman with one of these perfected ploughs is the admiration of every beholder; and no one admires good ploughing better than the humble writer of these lines, and perhaps I may be permitted to say that in my early days few practised it better. Just, then, think of it for a moment. Here was I, a young farmer, with the two best plough-horses on my father's farm, and a plough made by our plough-maker after the best style, and by him presented to me as a compliment to my skill, &c.: was it to be wondered at that I did strive to perfect my work? I certainly did so; and I made better work than any of the steam ploughs have yet effected; and so I ought. Now, it does seem to me perfectly ridiculous, the height of folly, to expect that a steam plough should equal such work at present. Why, steam ploughing is certainly and most truly "*in its infancy;*" it is, in fact, only the emanation of a few past years, and it is only within the past four years that it has assumed a favourable and decidedly practicable shape. Why, then, are we to expect so much at this early period? Every invention must have time. I repeat, it is absurd to institute a comparison between the steam plough, yet in its normal state, and managed by unpractised men, and those clever implements manufactured by our most experienced and best makers, perfected after some four thousand years of inventive skill and experimental practice had been betowed upon them, and these very ploughs placed in the hands of the most skilful workmen trained to the plough from their earliest days. I have seen many trials of steam ploughing. I witnessed the trials at Chelmsford, at Salisbury, at York, and elsewhere; and I gave to them all the unbiassed and unprejudiced attention of which I was master; and I fearlessly assert that the work done was highly creditable and business-like, and at a depth and with the uniform precision that no common plough can attain to; and if, Mr. Editor, you will permit me, I desire, and will endeavour in a subsequent paper, to point out what appears to me their relative merits and capabilities to aid practical agriculture in the department of ploughing. My chief aim now is to disabuse the minds of my brother-farmers, and beg of them to suspend their judgment upon what has already transpired before them, as I am fully persuaded far better things are in store for them, and that ultimately ploughing by steam will be no novelty, but become as common as steam thrashing now is, and as comparatively cheap.

That good economical ploughing by steam would be a vast acquisition in farm practice, few will deny; and the same will apply to other modes of culture. It is no longer a problematical question as to the draught-power of steam over the soil. By traction engines carrying their own rails and drawing their own burdens, by fixed engines with wire ropes and anchorages, and by a combination of fixed engines and horse aids, has this power been respectively achieved, and can be carried out to any extent. The implements of culture sought to be applied through the aid of steam to the soil are various. The common plough, the turnrest plough, and the various grubbers, are all applied and applicable to the cultivation of the different varieties of soils, and all efficacious according to soil and circumstances; the great desideratum now being cheap and effective ploughing by steam. That this will be accomplished I entertain the most confident hope, and I will in a future paper endeavour to show how it may be attained.

THE STEAM-PLOUGH AT STIRLING.

An important meeting of agriculturists has just been held at Stirling to adjudicate the Highland and Agricultural Society's premium for the best steam-plough. Recently, as is well known, steam-ploughing has formed an attractive feature at agricultural societies' gatherings, Mr. Boydell's locomotive engine, with its "endless railway," Mr. Smith's cultivator, and Mr. Fowler's plough (both hauled by wire ropes, windlass, and anchored-pulleys), having been exhibited in work to crowds of farmers and sight-seers; but only on one occasion has a prize been awarded, namely, at the Yorkshire Agricultural Society's meeting, when Mr. Boydell's engine (the only invention there competing) was thus honoured by the judges. The Salisbury trials, unsatisfactory as they were, have not yet been pronounced upon by the Royal Agricultural Society; and it is gratifying to find that the Scotch farmers, who adopted the thrashing-machine of Meikle, took the lead in the improvement of ploughs, applied the discoveries of Deanston Smith, and first found the advantage of every farmstead having its steam-chimney, are foremost in giving their deliberate sanction to the steam-plough as a means of better and more profitable husbandry.

Last year the Stirling General Agricultural Association practically tested the capabilities of a method of steam culture invented by Messrs. Fisken, of Auchterarder, by which a common portable steam engine stationed in the field is employed to drive a travelling implement by means of a rapidly-moving hemp cord suspended above the ground, and a fixed wirerope, along which the ploughing machine winds its way. In a remarkably fair and considerate report the committee stated that, although defective in several mechanical details, this ingenious apparatus fully demonstrated the value of its principle of action, one of their chief grounds of approval being its adaptation for working any tillage implement beside the plough, while the engine may be suitably employed in thrashing, or any farm millwork whatever, thus being really calculated to dispense with one-third of the farmer's horses.

This year a prize of £200 has been offered by the Highland Society, leaving the committee of the Stirling Association to conduct the trials and adjudication. The three days of private trial began on Tuesday, followed by a public exhibition on Friday and Saturday upon Mr. Forrester's farm at Stewart-Hall, the judges being Mr. Henderson, of Banks; Mr. Patterson, of Offers; assisted by Mr. Miller, of Millfield, as engineer; while Mr. Finnie, of Swanston, Mr. Gibson, of Woolmet, and Mr. Hall Maxwell, the secretary, were present on behalf of the Highland Society. A considerable competition was anticipated, especially as the three favourite classes of schemes, represented by a locomotive traction-engine, a travelling engine with rotary digger attached, and haulage by wire-ropes, are now taken in hand by our most influential manufacturers. However, owing to a variety of causes, Mr. Fowler's steam-plough alone made its appearance,—an unfortunate circumstance for the public, as in spite of the prolonged and thorough testing to which the machine was subjected, the element of simultaneous comparison has been entirely wanting. This machine is similar in construction to that shown at Salisbury, though with minor improvements; the combined 10-horse engine and windlass at one end of the field, and an anchorage at the other, travelling very slowly, so as to keep always opposite to the ploughing, and dragging the implement to and fro by means of wire ropes. The ground under operation on Wednesday was a level clover lea, of tenacious coarse land, in an unfit state for ploughing, until mellowed by frost, before the usual ploughing season of February; yet the quality of the work was superior to that of ploughing done by horses for the sake of comparison. At 5½ inches deep two horses were unable to work a common plough, three being required, at an expense of at least 15s. per acre. Tried against time, first for 2 hours and again for 1 hour, the steam plough drove 4 furrows at that depth at the average rate of 7 acres in a working day of 10 hours, stoppages included, the length of the furrows being 330 yards. The total cost was computed not to exceed 9s. per acre, and in order that this estimation may be understood the following particulars are given:—Taking the average size of the fields to be about 17 acres, there will be 2½ days' work and one removal of the machinery for each field, each removal occupying half a day; so that two fields, or 34 acres, will be the amount of work for one week. The daily expense of coal, oil, water, and labour is reckoned at 35s.; the two shiftings require four horses half a day each time, costing say, 20s.—but a deduction of, say, 10s., may be made for the two half-days' saving of fuel, water carrying, &c. Then, for wear and repairs—of course, much depends upon the number of days worked annually and the soft or stony character of the country—but, taking the outlay required at £120 per annum and the time of working 30 weeks, we have the heavy item of £4 per week. Adding these various sums and dividing by the number of acres ploughed weekly, we get 9s. as the utmost cost of the heavy land work referred to.

On Thursday the machine was tried on somewhat lighter soil, a wheat stubble partly overspread with farmyard manure. The length of furrow varied from 220 to 236 yards, thus necessitating frequent changing of widening gear, &c., at the ends of the work, which, however, were accomplished in an average space of half a minute. In one hour nearly an acre was turned over seven inches deep; with the above-stated conditions as to dimensions of fields, &c., this is equivalent to about 48 acres per week, at a total expense of only 6s. 3d. per acre, whereas the common cost in the district of such laborious pair-horse ploughing is 12s. an acre. The excellence of the work was, however, still more the theme of universal approval than the great economy with which it was performed.

A trenching plough, taking only two furrows' breadth, but lifting up a stratum of subsoil and laying it upon the buried top-slice, was also tried, and the effect of its action was considered equal to that of manual digging, whether for depth, which averaged 12½ inches, or for the complete pulverization of the dry soil by the rapid progress of the implement. To perform such work by horse-power would cost, it is said, 35s. per acre; that is, if it could be done at all. But the steam-plough, without trampling or injuring the soil or subsoil, effected nearly half an acre of this deep trenching in an hour; or say 22 acres per week, at a total cost of 13s. 9d. per acre.

On Friday and Saturday a considerable concourse of spectators assembled in the various trial-fields, the many farmers and landowners present expressing themselves with one voice as fully persuaded not only of the profitableness of the steam-plough, but of the great value of its work over that done by horse-teams. Mr. Fowler has been fortunate in at last obtaining a sufficient trial, in a suitable district, by men of business thoroughly intent upon doing justice to a novelty like the steam-engine in plough-harness; and whether or not the Highland Society may withhold its reward for want of greater competition, there is no doubt that the judges' report, after another day's trial at Edinburgh, will thoroughly awaken the agricultural public to the great advances which have lately been made in steam culture.

A GENERAL VIEW OF AGRICULTURAL MATTERS; SALE OF CORN BY ONE COMMON SCALE; AGRICULTURAL STATISTICS, &c. &c.

A. Stafford, Esq., M. P., said at the Northampton meeting on Thursday, Oct. 15, "Perhaps they would allow him to dilate a little on the subjects connected with agriculture which had occupied Parliament. He knew that politics were excluded, but farming was not; and while parliamentary politics and religious differences were wisely foregone, he thought it too much that questions solely affecting the land should not be mentioned. When he was last elected, the necessity was represented to him of the mode of the sale of corn being adjusted to one common scale. Farmers said it was most desirable, and would be more satisfactory in these days of rapid intercommunication, affording a better guide in transacting business, and a far simpler way of dealing. Thus pressed, he had communicated with Government on the subject, and the hon. member for North Staffordshire (Mr. Adderley) announced his intention of bringing in a bill. He (Mr. Stafford) waited for this bill to state his opinion on the subject, when the bill should have been read a first time and printed. But when the bill was brought in, such objections were urged and obstacles raised by various interests affected, that the bill was obliged to be withdrawn, and Government did not think it right to bring in another bill that session. Twenty years ago, a committee sat to consider the subject; and their report was such as to deter Government from going into such a difficult and thankless question. It was dry in detail, and involved perplexing and complicated machinery, and unless much greater pressure was put on the executive government, he could hold out no hope that the adjustment desired would be carried into effect. Petitions from Scotland and Ireland had also been received for a uniform standard. All agreed in the inconvenience of the present practice, but no remedy was suggested that would meet the difficulties of conflicting interests; and all such interests had to do, in opposing a measure without such remedy, was to show the difficulties that would arise from it." The hon. gentleman next referred to the question of agricultural statistics. A bill had been brought in by Mr. Caird, that it might be considered and criticised during the recess. He (Mr. Stafford) thought the advantages and disadvantages of agricultural statistics were both exaggerated. If any definite and good result could be arrived at by them, he did not think that £20,000 would be much felt or cared for in this high tax-paying country. No bill should have his sanction that was at all inquisitorial in its character: the farmer should have a right to give such returns as he thought fit, and not be required to give any more than he thought fit. The agricultural producer should be on the same footing as the Manchester cotton spinner. Every pound of cotton that came into the country, and every bushel of corn was registered, and no farmer objected to that. How much cotton they bought the Manchester people objected to say, and would not allow any one to see their books to ascertain, and the agriculturists had a right to act in matters similarly affecting them in like manner, and withhold their books from inspection. The tenant farmer was entitled to the same privilege as other classes, and that right would be considered in any future measure that might be submitted to the country with respect to agricultural statistics. Unable to separate it from the agricultural question of labour, the hon. gentleman next referred to the law of settlement. They knew how, on the one hand, it was required by existing arrangements, landmarks presented by their parishes—the source of many dear associations, and ennobling recollections—while on the other hand, it was incompatible with that free market for labour and open competition, which ought to be the labourer's right. He had seen bill after bill withdrawn on this complicated question. The only remedy seemed to be that boards of guardians should have greater powers than the central board was willing to give them. In Ireland a power was vested in boards to make the whole union into one parish, and a suggestion to adopt such a plan in certain cases seemed to be the only method of meeting the difficulty. It was now twenty years since he first attended such meetings, and he thought there was nothing to regret in the constitution and conduct of such societies. They had lived through and borne down much opposition, agriculture had been advanced, and he could truly say a better understanding between landlord and tenant had been obtained; they were never on a more healthy footing, and long might they continue so. This being so a good case was made out for such societies, if they had no other ground for satisfaction. But there was another class who were benefited—those on whom they must, notwithstanding all their improvements, depend for the daily bread they eat—the labouring classes. He had never attended such a meeting, where the advancement of the rural population had been unrecognized or not practically met; and, though they might not be faultless—not such monsters as the world never saw, beings without a fault, but, like themselves, having some faults of their own—they never evinced more attachment to our social system, and willingness to do their best in promoting the production of the soil. Yet a few years ago they were told everything was tending to depreciate the attachment of the rural population, that they would cease to have any claims upon our gratitude and admiration. They were also told that, with larger imports and less restricted commerce, peace would spread her halcyon wing throughout the world, and they should hear of war no more. Those living among the old oaks and cultivated acres in the country had some little doubtful prejudice on the point, and subsequent events had shown plainly enough, perhaps, that they were the better judges. Instancing the hardships and dangers of the Crimea, the hon. gentleman claimed for soldiers from the rural populations that they constituted the chief strength of our army, in their powers of endurance of the vicissitudes of climate and the fatigues of long marches, where men from manufacturing or civic populations became exhausted. It had been the custom to run the rural population down, and he had often been struck with the glibness with which town populations eulogized their advanced civilization over that of the rural districts, but none were more moderate in prosperity or patient and enduring in adversity, or more the mainstay of our army at the present time.

THE WITHAM AGRICULTURAL SOCIETY.

However good, bad, or indifferent the agriculture of the district may really be, Essex is at any rate famous for talking of the art. The county positively abounds in orators. There is the very Nestor of them all, Mr. Robert Baker, to begin with; in nice antithesis to that more modern light, Mr. Sheriff Mechi. Then there is Mr. Fisher Hobbs, who, however, says more "in another place" than he does at home; "the hard practical" Mr. Hutley, as he has been called—the gallant Major Beresford—the reverend John Cox—the honourable M.P., Mr. Bramston — all ever ready to make farmers and farming at least the text-word of their discoursing. It is only fair to add that in few quarters is the subject treated in a more business-like manner. It was the country of all others for Mr. Mechi to start his theories and propound his discoveries. They were sure to be tested. If there was anything right or wrong about them, it was certain to come out. Before he rooted them up, there was always somebody looking over the hedge, to see what wonders their enthusiastic neighbour was achieving. In a word, our friends here do anything but "drop the shop." They rather make it Lord Paramount upon every available opportunity; and there are few public occasions when agriculture has not a hearing and a place.

Whatever may be the fate or fashion with other gatherings of this autumn, Essex well maintains its charter. There is one Society, especially, that at Witham, where the members continue to meet, with the thorough determination to talk over their own affairs. After, of course, duly honouring the usual loyal toasts, they "turn to" what they have to discuss, often enough without the formality of any toast at all. For instance, if any one is known to have tried some fresh experiment, or to have been more than commonly successful in some branch of his business, a pertinent question is at once put to him. Mr. Mechi was somewhat distinguished in this way, either as the challenged or the challenger, with William Hutley as duly instructed to cross-examine. The reporters, moreover—and we have to honestly compliment the representatives of the leading county papers—have been by no means satisfied with "after a few practical remarks from Mr. So-and-So," or with "A desultory conversation then ensued." On the contrary, they carefully take down this question and answer, by which a reader frequently gathers as much in three lines as he otherwise would in a column. Mr. A. does not feel it necessary to say that he "is unexpectedly called on," or that "this is the proudest moment of his life," or that "so thoroughly unaccustomed as he is to addressing a public meeting, he only hopes they will excuse his speaking for an hour and a-half." They don't countenance this sort of thing at Witham. But Mr. A. says to Mr. B., "What about that seed-wheat you made so much of?" And Mr. B., "with a simplicity of purpose" that does high honour to that cabalistic phrase, straightway replies, "Well, look here, I'll tell you."

It is a pleasant thing to note that this kind of discussion is not solely maintained by the farmers themselves. Although wanting even, as it lately has, the attractive vivacity and opposing principles of Mr. Mechi, these meetings still prosper. To be sure there is no one engages in them with more heart than the noble Lord who presides here. No one could set them going in a better spirit, or keep up the ball more agreeably or usefully than does my Lord Rayleigh. His Lordship, however, is himself a practical farmer, with a little liking for progress; and who so takes a pleasure in what he is doing. He grows wheat upon the Lois-Weedon system, and comes—or did come last week—to tell Mr. Hutley how he did it—how he gets five quarter and a-half, and instead of two and a-half—what it costs—and all about "the old pastures," and so forth.

And then—but let *The Essex Herald* give us a taste of how this sort of debate proceeds :—

"Mr. JOSEPH HUTLEY being called on for a statement as to a new stock of wheat he was raising, said, he selected an ear of wheat in a field from which he obtained 108 kernels; he sowed them, and had a pint and a-half; this produced seven bushels, and now he had seven acres of the wheat.

"Mr. SMITH asked if he would sell him some of it.

"Mr. HUTLEY said he would at the rate of £24 a load.

"Mr. FOSTER, on being called upon by the President, said he was sorry to state he had no experiments the results of which he could lay before them. Formerly he, like Mr. Hutley, made experiments in wheat growing from a single ear, when he produced a variety which Lord Rayleigh called 'Foster's pup,' and he knew it pupped a good deal of money into his pocket (Hear). He continued to cultivate this wheat till it out-grew him. It was now grown largely in Devonshire; and it answered well on some lands about here; but with him at last it lost in quantity, and he gave it up. Since then he had selected an ear or two and raised stocks that had answered his purpose well. Mr. Hutley had mentioned the number of kernels he had found in an ear; with his own—Foster's Imperial wheat—it was not an uncommon thing to find 108 kernels in an ear—he had had a handful that averaged 108, and one with 111; but he had never seen it in any other wheat except Rivets. As to the working of the two acres of land referred to, on the Lois-Weedon system, he had thought his Lordship gave it as one acre that had produced this; but, having heard the explanation, he fancied that if his Lordship would sow the field every year with wheat, it would produce almost what it had done, without the expense of forking. (Hear.) He had thought, from Mr. Smith's statement, that they were to have five quarters an acre; but it was something like Mr. Blood's statement, who once came there and said he had seven bushels of potatoes off a rod of ground ; but then it came out that they were in a single row, and thus had plenty of air. His Lordship's crop was a paying crop, but it was not so advantageous as he thought it was.

"Lord RAYLEIGH : My bailiff will tell you I cannot grow a quarter of wheat so cheaply as in that way.

"Mr. FOSTER : But if you go on in that way you will starve the public by cultivating only half the land.

"Lord RAYLEIGH : That is another question.

"Mr. FOSTER said he thought it was better to lay money out for manure, and grow a full crop ; as on the Lois-Weedon system the country would be starved, and could not go on."

Next follows something on the cultivation of woodlands. Once in cover, they get on the line of a fresh fox, in this wise :—"He (Mr. Forster) as a farmer thought they were very negligent as to the beans they grew; he thought there was no grain wanted more selecting, so as to get a good stock, than beans. He did select a stock from his crop some years ago, and the increase was immense ; but while he was out they got mixed, and he never had time to pay that attention that was required, for these things wanted the master's eye.

"Lord RAYLEIGH : What do you call a fair crop of beans ?

"Mr. FOSTER : Anything over five quarters an acre.

"Mr. J. HUTLEY : Do you mean that the woodland pays you ?

"Mr. FOSTER : It pays me remarkably well ; it grows surprisingly good corn, at little expense.

"Mr. J. HUTLEY said, on 18 acres of wood land he had 112 quarters of wheat the first time it was cultivated ; he had now planted it again with a dressing or guano, &c., and he thought it would answer well."

After a short ring with him Mr. Speakman ingenuously confesses to the liberties he had taken with a five-acre field "of his own," and what he got out of it. Then Mr. Thedman "believes, in Mr. Mechi's phrase, thin seeding to be 'a settled question'—that is, it is very often a failure." Mr. Pattisson next wants to know why he should not grow tobacco, and then we come to a toast. The Chairman gives the health of a gentleman present. Strange to say, his Lordship does so without rubbing the unfortunate man down with soft-soap, or emptying the butter-boat over his head. List, ye time-consuming Ciceros, to how they manage these matters in Essex—

"The PRESIDENT gave 'The health of Mr. John Hutley,' and asked him what he had to say as to draining in Dengie Hundred.

"Mr. J. HUTLEY said he had drained nearly 40 acres, and he found it answered very well indeed when they could get a draught, but in most of their fields they could not get ditches deep enough to take the water away. He had done most of the charity lands, which his Lordship knew, and found it answered very well. He had gone 24 inches, and piped it.

"Lord RAYLEIGH : You think two feet is deep enough ?

"Mr. HUTLEY : I think it plenty deep enough. I think if you went deeper you would not get the water to draw to the drains.

"Lord RAYLEIGH : What do you think of rolling the heavy land in Dengie Hundred ?

"Mr. HUTLEY : It will not do at all. I was for rolling, and my man said, 'You must not.' I said, 'You shall.' We rolled a part and left a part, and there were two or three quarters of oats difference an acre. I can only say I find the more stock I keep, and the more muck I make, the more the crop of corn."

And so the discussion closes as his Sir Tatton Sykes and his friend Mr. Jorrocks would, with "Muck's your man."

It was not quite all farming either. There was a little incidental conversation, anything but out of place. Mr. Blood, as a sportsman, might indeed say—"He had ceased to have an interest in agriculture since stubbles had become matters of history, and turnips were set in such vulgar rows that there was no pleasure in walking over them (Laughter). The agriculturists seemed now only to think how they could get the most money out of their farms; they were falling into the errors of the Manchester and manufacturing school, and were endeavoring to get as much as possible out of the ground, not caring one straw for the sport that the land might be made to produce (laughter). He would ask them—he would ask Mr. Smith, for his land lay most convenient, just to leave his stubble four inches from the ground, and then he should think that gentleman was really sincere in wishing him well (laughter)."

Mr. Smith, be it understood, had been proposing poor Mr. Blood's health. In no way daunted by this laughter, the latter goes at them again, with something that brings the sports of the field into a little more kindly association :—

" Mr. Blood said there was a field of wheat of three acres belonging to Mr. Pattisson, on which a fox was killed, and the master of the hounds observed he never saw a field so cut up before. He should like to know the result.

" Mr. Pattisson said the result had been that the crop was a very good one, and he found not the slightest damage. He should be glad to see the hunters on any field of his in future (cheers).

" Mr. Wm. Hutley said the horses never did any hurt."

We have ourselves known many a similar instance to this—one particularly in Oxfordshire, where the field was such an eye-sore, that the occupier " daren't trust himself to look at it," till a week or two before harvest, and then it was " the best piece of wheat he had."

We dwell on this meeting at Witham as something of an example for similar associations. There is a straightforward tone about it that we find but too seldom. We want more chairmen like Lord Rayleigh, and more speakers like Mr. Hutley. Not people who are always at " the proudest moments of their lives," " unexpectedly called upon," talking " fine," and making tinsel heroes of honest men.

ROAD REFORM.

The question of turnpike abolition and maintenance of roads by assessment, which has been for ten years in agitation in Haddingtonshire, as well as in the counties of Fife, Forfar, Lanark, and others, was brought to a crisis in the first-named county, at a meeting of the general turnpike trustees, held at Haddington on Thursday, Oct. 15. A keen and animated debate took place, in which the proposed reform was advocated by Lord Elcho, M.P. for the county, and resisted by the Right Hon. R. A. Christopher Nisbet Hamilton, M.P. for South Lincolnshire. The result was that the numbers were equal for and against reform, when the chairman (the Marquis of Tweeddale) gave his casting vote against the proposed change.

The question came before the meeting on the report of Mr. M'Connel, the eminent road surveyor, who had given in an elaborate report on the roads of the county. Some of the roads had fallen into disrepair owing to the falling off of the toll dues, resulting partly from the absorption of the through traffic by the new highway—the railway—and by the diverting of traffic into the side roads towards the railway stations, on which it was not intercepted by tolls. The county had on various occasions sanctioned resolutions and even draught bills for the abolition of tolls, and the imposition of assessment on lands and heritages, and on horses, in lieu thereof; and the farmers' club had almost unanimously supported the proposed reform. Before finally deciding, the county had employed Mr. M'Connel to report on the whole subject; and, after employing nearly two years in the collection of statistics, that gentleman reported in favour of the present system, with a readjustment of the toll bars, so as to intercept the altered currents of traffic.

Lord Elcho, in moving "That, in the opinion of this meeting, the system of maintaining roads by tolls and statute labour should be abandoned," contended that the toll system was inconvenient and expensive, and quoted the letter of an hon baronet, last year an opponent and now an advocate of the present system, depicting its great inconvenience in calling on the wayfarer to unbutton and deliver his twopence, and its expensiveness from the fact that it sometimes cost one penny to collect the other. He quoted the testimony of reports previously adopted by the county, that it was partial and unequal, making one man pay toll for a single mile, and enabling others to travel ten or eleven for a single toll. He adduced the report of Mr. M'Connel to show that on even his economical system of farming the tolls, the expense of collection was 15 per cent. for merely local collection, or, as his Lordship held, from 20 to 25 per cent. when the expense of general management, the usual allowance for loss in collection, and the expenses of toll-houses, steel-yards &c., were included. An assessment, on the other hand, could be levied for 5 per cent. The equitability of an assessment, he held, admitted of no dispute. I know, said his Lordship, that my right hon. friend holds the doctrine that those who use the roads should pay for them. That is a doctrine that he holds in common with that great authority, Adam Smith; and perhaps he will allow me to compliment him on being a disciple of Adam Smith. (A laugh.)

Mr. Nisbet Hamilton : I always was.

Lord Elcho : Perhaps with respect to roads, but not in other articles; but I am very glad he is a convert to him in any point. But with regard to Adam Smith, I thought it right to look up what he says on the subject. No doubt Adam Smith says that those who use the roads should pay for them, and nothing could be fairer; but you cannot make people pay in proportion to the damage done by them, for the man who travels one mile pays the same as he who travels five, and unquestionably the latter does more damage to the roads. But what does Adam Smith also say? " This tax or toll, though it is advanced by the carrier, is finally paid by the consumer, to whom it must always be charged in the price of the goods." And in another place he says : " The expense of maintaining good roads and communications is no doubt beneficial to the whole society, and may therefore, without any injustice, be defrayed by the general contribution of the whole society."

Mr. N. Hamilton : The nation.

Lord Elcho : I know my right hon. friend means by that ironical expression to imply that it would be a general assessment like the income-tax. But my objection to the roads being maintained by national funds is that the roads would be in the condition in which the roads are abroad, where they are maintained by the State, and where the through lines are in a good state, but all the local roads are up to the knees in mud. I apprehend that the road assessment would be put on the same footing as any other county assessment, whether for police, prison, or other purposes. At last meeting I referred to what had taken place in Ireland, and I quoted from the report of the commissioner appointed to make the inquiry. I find that Mr. Clements, who was the commissioner, says, with reference to the argument that those who use the roads should pay for them: "The specious fallacy of 'those who use a road ought to pay for it' has never stood the test of inquiry; the correlative proposition that those who do not use a road ought not to pay for it being contrary to present practice, and to our fixed notions of maintaining highways for the common benefit." Mr. Clements's report was drawn up in 1856; and, in accordance with it, an Act of Parliament was passed, which abolished all tolls in Ireland, and substituted an assessment. I say that an assessment is the fairest way of raising the revenue required for the maintenance of roads; that every person is interested in having good roads; and that it is good roads that make property valuable. The authority I have already quoted—Adam Smith—says: "As vicinity to town is a cause of rent, so vicinity to a road, navigable river, or canal, by diminishing the expense of carriage to some great market, may have the same effect." Therefore, every person's property is dependent on having good roads. Without them, you cannot get your corn to market; and though a proprietor may never put his foot on the road, still it is reasonable he should be called on to pay for roads which raise his rent, and which, indeed, give him rent. Lord Elcho proceeded to say that the proposed assessment was but an extension of the old statute labour principle, by which all but the principal lines of thoroughfare were still maintained. The turnpike system was first introduced into this county in 1750, to meet the case of the through traffic then opening up throughout the country; but now that the railways had absorbed the through traffic, the reason for maintaining roads by tolls entirely ceased. His lordship then cited the following eight Acts, in which the Legislature had sanctioned the principle of assessment for maintaining roads: 1, Highland Roads and Bridges Act, 56th of George III. 2, Peeblesshire Act, 1818, for Improvement of Roads and Extinction of Debt; assessment 6d. sterling in pound Scots. 3, Argyleshire Act; assessment not exceeding 8d. per pound on rental and 4s. on horses, where the person is not otherwise assessed. 4, Orkney; assessment 1s. for roads and 1s. for debts. 5, Perthshire; a road along Loch Earn, made by Sir Peter Murray. 6, Welsh Consolidation Act, after the Rebecca riots. 7, Isle of Man Act; assessment on wheels and dogs. 8, Act for Ireland, on Mr. Clements's report. Lord Elcho concluded by adverting to statistics collected in the counties of Fife and Lanark, showing that the burden on property would be less, as well as more equitably arranged, under a system of assessment, instead of tolls.

Mr. AITCHISON seconded the motion of Lord Elcho.

The Right Hon. NISBET HAMILTON moved:

"That this meeting is of opinion that the most equitable mode of raising funds for the maintenance of the public roads is by a well-regulated system of tolls."

He said: Unless my noble friend can prove beyond the possibility of contradiction that it is impossible to maintain the highways of this county by means of turnpikes and statute labour assessment—which, I maintain, he has failed to do—I cannot conceive his introducing, especially in a district like this, the dangerous principle which he proposes—a principle which is most obnoxious to the general taxation of the country, and which, if introduced into local matters, whether in the form of an addition to our income-tax or our assessed taxes, would be still more odious than the form in which these taxes already exist. The income-tax is, I hold, a system of imposition that ought only to be applied—and I believe statesmen will generally acknowledge it to be so—to the raising of public revenue in cases of great emergency, and ought not to be employed if any other equitable means can be brought forward for the purpose. I cannot possibly conceive that, in a county like this, which is called the "garden of Scotland"—and very justly, because it is so highly farmed—and where there is a considerable amount of intercourse from place to place, it is impossible to uphold that ancient, and, as I maintain, that equitable, system of levying the revenue from tolls, by which the money is drawn from the pockets of those who use the roads. When I find Mr. M'Connel laying down this broad principle that I have mentioned, in his report, it certainly appears to me to be a practicable as well as equitable thing to raise the revenue by a system of tolls fairly arranged. It is clear to me that, by consolidating the different road-trusts of the county under one general board, by converting many of the statute labour lines into turnpike roads, and by placing toll-bars at the points best calculated to intercept traffic, the required revenue would be obtained. My noble friend has referred to different places that have resorted to the assessment principle, such as Argyleshire and Orkney. But let us consider what the highways of those counties are. Their chief communication is by steamboats and other vessels; and in Argyleshire at least the roads were made at the public expense, and not by local arrangement. And as to the county of Orkney, you might as well talk about putting turnpikes on the Bass Rock. My noble friend says there is a considerable amount of expense in collecting this tax. Not the least doubt about it. There is also immense expense in the collection of many of our national taxes; but that is no reason why the county should abandon that which is a just mode, and substitute one which is oppressive, inquisitorial, and unfair. Are we to adopt a system of confiscation, because it is simple and easy? I maintain that no greater blow could be inflicted on the landed interest in this country than that system, which had its commencement in Manchester, and is now taken up by a set of conceited shopkeepers in London, of invariably laying the burden, if they can, on the land of the country. After adverting to the difficulty of obtaining legislative sanction to such a measure, especially in the face of a strong opposition in the county, Mr. Nisbet Hamilton said he would rather have the three tolls in his parish (Dirleton) doubled than sanction this unjust arrangement, which would not even exempt property, as the income-tax did, when burdened by family settlements or otherwise, but would assess on the full rental free and burdened estates alike. My noble friend, he continued, has referred to Fife and Lanark as having adopted his view of the case. Now, I can quite well understand a parcel of Glasgow manufacturers and shopkeepers overwhelming the landed interests in Lanarkshire and compelling them to make roads for their use. We know very well that the assessment on mills, factories, and houses never amounts to anything like the assessment on land. A man might make 50,000*l.* by his mill, and yet not have a tithe of the land which a proprietor has who only receives 5,000*l.* a-year; and all this shows how cautious we ought to be before we adopt a principle of this sort; for depend upon it, when you once adopt it there will be no retracing your steps (Hear, hear). When you come to establish your rural police, and build gaols and lunatic asylums, you will be favoured with a little more of this principle. But this agitation is not a new one. An agitation of a similar nature exists elsewhere with regard to the assessment for the poor. It is held a convenient system to assess the land, by gentlemen living in towns and places of that description—it is held very much by the manufacturing interest, through which pauperism naturally exists to a considerable extent in these particular places, in consequence of gentlemen who have mills employing a good deal of labour, and whenever that labour becomes incompetent to carry on its work like a machine, the labourer is set about his business, and the consequence is that the poor-rate in towns becomes enormously increased. An attempt was made of that kind by means of the Government of the country, but was resisted by parliament, to obtain what you will probably have here if my noble friend's motion is carried, namely, a national rate for the relief of the poor. Now, I think it is the duty of the landed interest to resist all this. Depend upon it, you will have burdens enough without fishing for them. With this mutiny in India you will have plenty of income-tax cares for the next few years without fishing for the most inconvenient mode of repairing your roads; and I recommend you to be very cautious before you take this leap in the dark. A national poor-rate would be the most unjust thing in the world, and would tax the country for the relief of the towns. We have another agitation in London among a set of conceited shopkeepers, agitating for a system of "road reform and turnpike abolition." The English of the system is that the land is to bear the burden, and that these gentlemen are to be entitled to roll along the roads in their carriages-and-four without paying a farthing for the roads they use. My noble friend alluded to Ireland. We all know that formerly there was seldom anything done with regard to roads in Ireland without a job. It was done by presentments, by grand juries; and the most atrocious jobs used to take place, and the people were made to contribute to the maintenance of roads to gentlemen's houses, or roads leading to nowhere, and probably the change that has taken place is just the consequence of that great abuse. But no such evil exists here: and I agree to the principle of equity and to the mode pointed out by common sense, that those who use the roads should pay for them. Mr. Nisbet Hamilton then referred to Mr. M'Connel's report to show that the valued rental of land in the county was 290,000*l.*, while the rental of mineral property did not exceed 7,200*l.* He maintained that it was the mineral, and not the agricultural property, that cut up the roads; yet this was the proportion they would severally pay under an assessment! The mineral interest will have nothing to pay; whereas the good simple landed interest will present their throats to be cut by these butchers (laughter). With reference to the theory that it was the consumer who paid, he asked whether the manufacturer would accept that theory if they were to propose to put a tax of 1d. per yard on cotton? It was only when they came to deal with burdens on land that they were told about the tax falling on the consumer. He thought it was he wiser policy to adhere to the present system, modified so far as was necessary in consequence of railway communication, and placing the bars so as to intercept the traffic and charge it in the most equitable manner.

Sir George Grant Suttie seconded the amendment.

The Earl of Haddington thought it would be for the advantage of the county if they could establish an equitable and moderate assessment. It would be much more convenient, and likely to cause a much better feeling than the present system; for that reason he would vote for Lord Elcho's motion, on the understanding that he should be afterwards at liberty to move the reservation of statute labour from it.

Among the other speakers were the Marquis of Tweeddale and Mr. Brown, who opposed the motion chiefly on the ground that the proposed change was a local and not a general measure, and would unjustly affect certain districts, especially those parishes in which frontier tolls must still be maintained. The Marquis also entered into figures to show that in his view the saving in the collection was too small to induce them to go into the change.

The vote was then taken, when 18 voted for the motion and 18 for the amendment, the Marquis of Tweeddale giving his casting vote for the amendment, which was therefore carried.

On the motion of Mr. Nisbet Hamilton a select committee was appointed to confer with Mr. M'Connel with regard to the most practicable means of consolidating the several turnpike trusts within the county into one, and the readjustment of the tolls, so as to secure the largest amount of revenue with the least inconvenience to the public.

LINCOLNSHIRE RAMS.

Sir,—It is as plain as the sun at clear broad noon-day that the Lincolnshire heavy-woolled sheep are gaining much ground and favour (by spreading over many counties, not only adjoining, but far distant), as being the most profitable sheep bred, upon all land where clover and turnips can be produced; and Peterborough Fair backs up strongly my assertion. The high-famed Mr. Kirkham of Hagnaby's forty-three shearhog rams, sold by auction at Peterborough Fair, by Mr. Briggs, averaged £23 1s. each; and Mrs. Casswell of Pointon's fifty shearhog rams averaged £20 4s. 2d. each, which speaks volumes in lines in favour of the Lincolns. Mr. Kirkham's forty-three rams, at Peterborough, made £991 3s.; and his son, Mr. Thomas Kirkham, of Biscathorpe, had let by auction, by the said Mr. Briggs, on the 3rd of September last, one hundred and twenty rams for the season, at £1,427; therefore the father and son's rams, this year, make £2,418 3s. The truth is neither puffing nor flattery. The fall of the auctioneer's hammer, and the facts and figures, stare hard in the face all deeply-rooted prejudiced men against the Lincolnshire long-woolled sheep, when the father and son make as much of rams in one year as would stock well a farm of 250 acres of good land. Samuel Arnsby.

Peterborough, Oct. 7th, 1857.

LINCOLNSHIRE RAMS.—Sir,—I beg to inform you that at Peterborough fair the celebrated Mr. Kerkham's (of Hagnaby) 43 shearhog rams averaged £23 1s. each; and Mrs. Caswell's 50 shearhog rams averaged £20 4s. 2d. each. It appears by the sales of rams at the above fair that the Lincolnshire long-wools are gaining ground, as being the most profitable sheep bred upon all land where clover and turnips can be produced.—S. A.

LAYING FARM-YARD DUNG ON CLAY EALLOWS FOR WHEAT.

The preparation of clay lands for a succession of crops by the process of summer fallowing, which pulverizes the soil and removes all weeds and stones, reaches the condition of receiving farm-yard dung for manure in the end August or during the month of September. Early operations are the most effectual and the best performances get the land ready in August for the reception of lime and dung. The first article in a pulverized condition is spread evenly over the land, and harrowed into the ground by a double-tine of the common-purpose harrows. The farm-yard is laid in small heaps on the land, spread by the hand forks evenly over the surface of the ground, and covered by one furrow of the plough. The dung may be carried in the fresh condition from the cattle-yards, being the production of the latest store cattle, and from the soiling beasts that consume the green food, or it may have been placed in a heap on the field of land from the month of March to the time of use, and will have reached a partially, if not a half-rotten condition, when it is spread over the ground in August. The lumps of dung will often not be covered by the plough, and lie on the surface, being pushed before the coulter, and not falling into the bottom of the furrow. A lad or woman with a hand fork follows the plough, and throws the pieces of dung into the hollows, where they are covered immediately by the next furrow of ploughing. This provision is made against the loss by evaporation from exposure of dung on the surface of the ground; but the theory of loss from exposure does not yet hold a confirmed dominion among undoubted facts.

The common plough opens drills with one furrow at convenient distances for green crops, and on light soils the dung is well covered by one furrow of earth being laid over it. Clay lands for wheat are drilled in the same way by one furrow, the dung is spread along the hollows, and covered by splitting the ridglets with the plough. In this way the plough opens a drill in going the length of the field, and in returning covers a drill of dung by reversing the furrow. This mode covers the dung very completely, and exhibits the field in the form of drills; not highly raised, or widely formed, as for green crops, but flatly done, and executed for the sole purpose of covering the dung from exposure. A cross harrowing is required to level the ground when the land is seed-furrowed in October. The two drillings of one furrow are less labour than one ploughing, and cover the dung much better. Even the harrowing that is required before the seed-furrow, does not raise the expence to an equality with the ploughing of the dung into the ground.

The wet nature of most clay lands prevents the carting of dung on the surface in October, and consequently the manure must be applied at an earlier period, and the land ploughed again for the sowing of seed. Cases occur when the dung is applied in October; but chiefly on the grattans of beans and peas, and on some few clay lands of the driest nature. Few wheat soils admit the application of dung in October, unless the modern system of frequent draining has produced a dry condition to bear the necessary cartage. Consequently the dung is covered by ploughing in August, or in early September, and a seed-furrow is done for sowing the seed in October.

The hitherto refrigeration of our globe from a state of expired combustion in a fiery mass, renders necessary the use of decomposing bodies as manures, to afford by decay the caloric to vegetables, and to raise the temperature of the ground, and also to place bodies in quantity together in the ultimate elements at insensible distances, in order to produce the same results of caloric and temperature, by the mutual action of fusion and attrition. Hence there arises a most important consideration in what way, mode, or manner the articles of manure are to be applied, in order to afford caloric to the plants and temperature to the soil in the largest and most effectual manner that is possible. Farm-yard dung buried in the cold clay ground can excite little action to raise the temperature of the soil—the quantity is too small to overcome the opposing resistance of clay and cold moisture, and the benefit is corresponding. Manure laid on the surface of the ground afford caloric in two ways: by sheltering from cold the vegetable growth, and by the residual decomposition of the substances sinking into and mixing with the surface of the ground, and producing the usual effect of mixture and combination. Farm-yard dung will be best laid on young wheats as a top-dressing in February and March, by means of timber railways placed on the ground at regular distances, and moved to the required positions. On this railway there runs a light iron four-wheeled waggon, which receives the dung from the carts at the end of the field, conveys it along the railway, and the dung is thrown from it on each side over the land in the quantity allowed, and to the distance that is convenient to the strength of a farm. The dung is immediately spread over the surface of the ground, and most carefully broken into small pieces, in order to cover every inch of ground for the purpose of a close protection. This performance must be very carefully executed, as the effect mainly depends on its disposition. The vicissitudes of the weather in suns, rains, winds, frosts, and thaws will destroy the matters of the dung, and exert a joint effect on the surface of the ground. In the usual dry season of sowing grass-seeds, the land is well-harrowed, in order to mix the light alluvium with the remains of the dung, which will produce a most choice bed for the grass seeds that are sown upon it, and pressed into a covering by an iron roll of not less than a ton in weight. The harrowing produces an alluvial top-dressing for the wheat that exerts a most wonderful effect on its growth, and is regularly done in Poland as a part of wheat farming. The mixture of the dung with the fine earth in the present mode raises a bed for grass seeds that is not equalled in any other way, and the heavy roll presses all matters together with the wheat plants almost invisible among the raised and compressed earth of the surface. The growth is quick and rapid from this bed of favourable composition, and surprises every observation and experience; the grass seeds are delighted in the matrix of a most intimate comminution of soil that is so essential to their nature, and which is not obtained from the stale surface of autumn-sown wheat, and manured at that time. This advantage to the grass seeds is very large, and along with the superior benefit to the wheat crop, constitutes a mode of applying farm-yard dung that is much beyond the value of the common way during late summer or early autumn, which prevents the full action of the manure, by denying the opportunities that are necessary for the development of its power. The cold of winter follows the winter application, the increasing warmth of the returning sun attends the use of the dung in the early spring, and these two very different elements confer a power of the utmost value and efficacy. It must be studied that all applications of manures are made under the best known circumstances to develope their power and promote their action.

It has happened to the writer of this essay to have had a very extensive and largely varied experience in practical farming, both on turnip lands and clay soils; and the length of the practice gave many opportunities of observation and experience. The prepared heap of farm-yard dung having failed to complete the manuring of a field of clay fallow in the end of August, a quantity of fresh dung from the stable door was applied to cover the remnant of the ground, and it was strawy and rough beyond the power of being covered by the plough, consisting of dry straws and dry fecæs of the horse. The dung lay exposed till October, when the land was seed-furrowed, and sown with wheat; the matters were better covered than by the summer furrow, while the harrowing pulled into pieces and spread the dung over the surface. In winter the ground was pretty well covered with the fragments of dung, among which the wheat soon evinced a superiority that continued very visible till harvest, and the crop was larger and thicker on the ground. The grass seed being sown in April, the advantages were derived that have been mentioned, as arising from laying the dung on the surface of the ground. This casual experience confirmed the mode now recommended, of applying farm-yard dung, and it destroyed in no small degree the theory of damage to farm-yard dung by evaporation from exposure. This theory has been very justly doubted, though conviction requires a length of time to be entertained. There is also called into question the fermentation of dung in heaps, and the fresh condition showed greater, at least equal results.

J. D.

THE SICKLE, THE SCYTHE, THE REAPING MACHINE.

In making a comparison between cutting grain by the sickle and by the reaping machine, we have been in the habit of regarding it chiefly as a question of expense; now, however, we are forced to look at it in another light: we must view it more as a question of expediency and of necessity. Our corn must be cut down and harvested—we cannot get sufficient hands to do it for love or money—what means must we adopt to attain our object? It is calculated that three scythemen, with their followers, will, on an average, cut, bind, and stook 4¾ imperial acres in the day. To perform the same work with the sickle eighteen people will be required, with the Hainault scythe twelve, and with the reaping machine seven. Now these people are distributed in the following manner:—

	Women reaping or gathering, &c.	Men cutting.	Men binding.	Men at machine.	Child at rake.
Sickle	15	..	3	..	..
Scythe	3	3	3	..	1
Hainault scythe.. ..	9	..	3	..	..
Reaping machine ..	3	..	3	1	..

As the greatest number of hands is required for the sickle, it is evident that a general deficiency will be felt by those most who use it, while a deficiency in the number of men usually employed as scythemen and bandsters will be felt by those most who use the scythe. But of the two there is no doubt that emigration at present will cause the greatest inconvenience to the former; for, though there may be a deficiency in men for bandsters, this evil can be in some measure remedied by teaching others to do it, and by farmers being satisfied in the meantime with an inferior class of work. We would, therefore, advise all whose crops are not too much lodged or twisted to endeavour to reduce their harvest expenses by using the scythe, which will, perhaps, at the same time, relieve them of no little anxiety if people are scarce, and reduce the risk of having a large breadth of crop ready to be cut, and no person to do it.

Of all the different modes of reaping, however, the greatest saving of hands is obtained from the use of the reaping machine. It is true we cannot expect to have all our crop cut by it in its present state, but by the use of it and the scythe very few more people than those ordinarily employed on the farm would be required during harvest, which every farmer must admit would be a great advantage. The reasons for the use of such machines are—1st, All our corn crops come to maturity at present nearly at the same time; 2nd, Our country labourers are reduced in number; 3rd, There is now a much greater quantity of corn to cut down; 4th, Harvest-work has become more expensive." A committee appointed by the Central Society of Agriculture of the Seine-Inferieure to report on the subject, gave it as their verdict that "the automaton machine of Aitken and Wright was preferable to all other reaping machines."—*Abridged from the Journal of Agriculture.*

PRACTICAL REMARKS AND HINTS ON IRISH AGRICULTURE, BY A PRACTICAL FARMER.

At the meeting of the North Kerry Farming Society, Mr. CHRISTY, a Scotch farmer, who has made Ireland his home, said: " I can bear testimony to the vast improvement that has taken place in the stock and the general show since I had the honour of acting as judge this time two years. Indeed, the improvement which has taken place is beyond all credit, especially in the tenant farmers' classes. When I came amongst you before, I fully expected to see some first-class stock in the gentlemen's classes, as I knew that Mr. Crosbie and Mr. Sandes had long been introducing some first-class animals into the county. But on that occasion your tenant farmers completely surprised me, and I warned the gentlemen that if they did not bestir themselves the tenant farmers would completely outdo them, and, I am happy to say, that, from the stock they exhibited to-day, they have fully borne out the high opinion I then had of them. I have no hesitation in saying that the tenant farmers' stock were the best brought out to-day. They cannot, of course, afford to lay out the sums of money necessary now to secure first-class short-horns. But if they will but steadily go on breeding from pure-bred bulls (as not using pure-bred bulls I look upon as the root of all evil in breeding), I feel sure they will in a very short time leave the landlords in the back ground. In looking at things in a general view, I believe there is not a county has done more to improve its agriculture within the last ten years than this. At one time to be a Kerry farmer, or to be called a Kerry farmer, would be considered a stigma; but if you go on as you have done these few years past, it will soon be the highest appellation that can be bestowed on an Irish farmer. There can be no doubt but that the capabilities of this as a butter-producing and green-crop-growing county are very great, and that you have been developing its resources in this respect is evident. But there is one point in your general management which has struck me, and which I cannot but remark, viz., the great portion of your best grass land you keep for meadow, and the total absence of clover. This I look upon as your great drawback, as I hold that any farm (that is, at least, any farm over 50 Irish acres in extent), with the aid of turnips, oat-straw, and clover-hay, can supply itself with sufficient winter keep. This will at once bring us to look for a general system of *improved mixed husbandry,* which, doubtless, in any country ,takes time to accomplish, but which, had we once thoroughly established it in this country, I *have no hesitation in saying, would place Irish agriculture the foremost in the world, especially in the breeding, rearing, and fattening of stock.* Indeed, the advances we are making in this respect are being invariably admitted. The gentlemen who come from England and Scotland to our leading agricultural shows are continually telling us we bid fair to rival the famed land of the short-horns itself. When we add to this the reiterated opinion of that best and most energetic friend of the short-horn, Mr. Strafford, that Ireland is the best-adapted country in the world for the propagation and improvement of that most noble breed, and when we take into consideration the fact that we have in this country some of the very best tribes of them, I think it is not going too far to say we bid fair to be the first breeding country in the world. You must not understand that I consider the natural advantages we possess of soil and climate are of themselves sufficient to enable us to go through the English and Scotch show-yards with flying colours now; for the parent stock of the short-horns are in England, and in the hands of men who bestow a degree of care and attention on them that, even had they a far more ungenial clime and soil than that of England to contend with, would still prove competitors that no ordinary exertions could overcome. But, taking us as a breeding country, from Cape Clear to the Causeway, we will give them something to do to keep pace with us. The truth of this was never so forcibly brought to my mind as on reading an article about this time twelve months in the *Mark-Lane Express,* complaining of the still unimproved state of the stock in many of the backward English districts, and comparing this with the vast improvement which has taken place within the last ten years in the large lots of Irish stock which have been daily imported to the English markets; thus bearing ample testimony to the improvement we are making in this respect. We must not, however, rest satisfied here: little has been done to what still may be done, and it is the landlords of the country who can now make the great advance in this particular. This reminds me of one thing that struck me in your show-yard to-day. Though it may, perhaps, be presumptuous on my part to offer any remarks as to the premiums you offer, still I take the liberty to suggest that where you make three classes of your farmers, I think, at least in the third class, the money given for bulls would be far better applied by increasing the premium for their cows and heifers, and let the landlords supply them with bulls. Because it is impossible for those farmers to lay out capital to supply a pure-bred beast; and I hold that no landlord can confer a greater benefit on his tenants, and do himself more good, than by bringing into the country pure-bred sires of every class and stock, and letting them have the free use of them. And I consider it is the landlord's duty to do this, as in many cases the tenements are too small to admit of the tenant laying out the capital necessary to secure a first-class animal. When we take into consideration that the benefit which the landlord could thus so essentially confer would be of such vast importance to the tenants, I think it is not going too far to say it is his duty to do so. The increased demand that would thus arise at home for pure-bred animals would bring our breeders in a far better condition to bear comparison with English and Scotch ones, whilst the general improvement and superiority of our stock could not but strike every visitor to our shows. Who can say but, with a few years' steady improvement in this respect, we may be able to share the lucrative trade which the English breeders are now enjoying at the foreign markets? The advantages that might thus accrue are but nominal, a mere drop in the bucket, to those that would be sure to arise from the great improvement of our general stock, and the much greater weight of beef and butter it would enable us to send into the English market, even in the very same number of animals. But to make the country tell to the full extent, much has to be done. Our whole system of agriculture must be remodelled. We must adopt those systems of cropping which would enable us to grow the greater amount of green crops. Much of our land must be so managed as to carry large herds of dairy-cows, stores, or fattening stock. The due proportion of tillage must be so arranged as to afford the greatest possible amount of winter feeding. But to bring the country under an improved system of mixed husbandry, much, very much, has to be done, and can never be accomplished without the most hearty co-operation of landlord and tenant. Our lands must be drained, our occupations squared and well fenced, our land cleared, so as to admit of the use of all the new and improved machinery. We must have comfortable and well-arranged homesteads, with well roaded farms. We must be alive to the use of all the artificial manure, not neglecting to keep an eye to the guano vendors, and be wary of the article, and we must not be slow in adopting all the new and improved machinery which the wonderful spirit of invention is daily calling into existence. In most of those particulars we are far behind our English and Scotch neighbours. But even this we can now turn to advantage. We can select, from among the myriads of improved implements their skill and industry have invented, those best adapted to our soil and climate, and from among their most improved systems of husbandry we can select those best suited to this country. We can, in fact, make short cuts to all their great improvements. We are, as it were, following in their lee, steering our course by them, and this saves the delay of having to make our own soundings. We are daily coming nearer and nearer to them, and now, with the spirit of agricultural improvement roused in the country, may we not hope soon to steer alongside? And I hope you will not deem me altogether visionary when I say I hope the day is not far distant when we will freely shake our sheets to the wind, put our helm about, and stand boldly away in the great ocean of agricultural improvement, and even hope soon to leave our late pilots far upon our lee.

A PRIZE TENANT.—HIS RIGHTS AND WRONGS.

Amongst my Lord Stamford's Leicestershire possessions, and of late years more than usually well known, is a farm called Groby Hall. From it, indeed, the heir-apparent to the property would take his title, and write himself as Lord Grey of Groby. It is not, however, for any such negative showing as this that Groby has become especially famous. It is not as a meet for hounds, or a harbour for pheasants that Groby is now renowned even in Leicestershire. There is something yet better to be said for it. In a district where the example was by no means unnecessary, Groby has risen to the rank of "a model farm." And when we say a model farm, we mean not the mere plaything of the amateur, but the earnest occupation of the man who gives his best energies to the pursuit he has been bred to. Tried by so severe a test as this, there are few places that are, or have been, for some time past so well done by the tenant as Groby Hall.

For generations past this farm has been held by the same family. From father to son have the Everards succeeded to it; until at length, on the increasing infirmities of his parent, the present tenant, Mr. Breedon Everard, who had previously had a smaller occupation on the same estate, entered in turn on Groby Hall. This was in the year 1852. Mr. Everard had already evinced some ability in his profession. His claim, however, to the Hall Farm was soon put to the proof, and as readily established. In 1853, following, or if not in some measure originating a system now coming deservedly into more general practice, Lord Stamford offered a premium "for the best cultivated farm upon his estates." Mr. Breedon Everard took it. For the next four years the conditions would not allow of his again competing for this particular prize; but he nevertheless in 1854, 1855, and 1856, received all the other prizes of the first-class, amounting to somewhere about twenty pounds per annum. This year he again became eligible to enter for "the best farm," and again Mr. Everard took it:—twenty-five pounds for "the best cultivated farm," ten pounds for "the best corn crops," and ten pounds for "the best green crops." Mr. Packe, moreover—the member for the county—handsomely gave a prize of thirty pounds for the best cultivated farm, not of an estate, but throughout the whole of Leicestershire; and again that of Mr. Breedon Everard was pronounced to be the best. The judge, Mr. Mason, thus comments on the justice of his award—"This farm is not naturally first-rate land, but the spirited outlay and excellent management of the tenant have made it a model farm in every sense of the word." Mr. Everard had, in fact, in a space of five years, laid out five thousand pounds in improving a farm of something over three hundred acres.

We can well picture the pride the noble owner of the estate must have in such a tenant as this. Not, be it remembered, a stranger, a new man, with new-fangled notions, who has come and shamed all his people out of their cherished sayings and doings. On the contrary, it is one of a breed landlords are especially pleased to speak of—"his great-grandfather, his grandfather, and his father, had it before him; and here you see is the old sort doing better than any of them." We know, we are happy to say, very many instances of landlords who encourage this feeling, even towards those doing anything but the best with their property. The agent thinks it his duty to complain, while he is often enough met something in this way:—"Well, you must give him another chance. Go and see what he wants; and tell him he must manage to get on a little faster. You know I should not like to turn him out, for his father and grandfather were there before him." If we do this with a bad tenant of the old sort, what shall we do with a good one? Why rank him and show him to our friends and visitors as one of the chief ornaments of the estate. Take foreigners to see him, and demonstrate to them what an English yeoman really is. Let him be jotted down in their note-books, with the patriotism of this ancestor at Naseby, or the more welcome loyalty of some other one earlier still. Let them carry away with them a remembrance of us, as not only one of the oldest and best families in the Kingdom, but with the oldest and best set of tenantry. Let them dwell on the kindly association between the two classes, and on that honourable feeling by which alone all their actions are regulated.

This is the least a landlord can do, considering how much it may be made to say for himself. If, still, he is of a very practical turn of mind, and has the opportunity, he may raise the man's rent. Of course, as Groby is "not naturally first-rate land," and as "the spirited outlay and excellent management of the tenant" have alone made it what it is, the rent was to be raised. There was to be a fresh valuation, and Mr. Everard submits without a murmur. His success was, however, destined to receive a yet more direct compliment from his noble landlord, and this was *"a notice to quit."* Within a few days of his being declared the best farmer in the county, having long been the best farmer on the estate, Lord Stamford shows his appreciation of such a man by ordering him off. At the end of six months from this time let him go. Never mind about his fathers and grandfathers, the way he has been farming, or the money he has yet in the farm—he shall not stop here. His Lordship will not have a man like Mr. Breedon Everard on his estate.

The natural question that arises here is, "What *has* the man been doing? Has he been shooting the foxes? Or wiring the pheasants? Or voting yellow instead of blue? Or what is it? Or is his moral character tarnished? Is he disgracing the neighbourhood, and a blot on the Stamford and Warrington property? No, this cannot be it; for no man, from the attendance at his sale the other day, appears to have more friends or to command more respect than Mr. Breedon Everard. But this may have made him forgetful of his own position? On the contrary, to the last no one could appear to have been more temperate in his tone or becoming in his conduct towards his landlord. Again, we ask what is it? Mr. Everard is no more in the secret than we are: "I so little expected what was coming upon me, that if Lord Stamford had sent me word that he was so well pleased with me that it was his intention to give me my farm, I should not have been more astonished than I was when I received notice to quit. I immediately wrote to Lord Stamford a most respectful letter, soliciting an interview — telling him that I must have been very much misrepresented—and telling him, likewise, that I could not call to mind anything, either by word or deed, that I had said or done to incur his displeasure, and trusted he would re-consider my case. To this letter I received no answer. This was on the 31st August. On the 28th September I waited on my lord at his own residence, and he not only refused to see me, but he likewise refused to assign any reason for taking so extraordinary a step, and I remain to this day as ignorant of his motives as any of you. * * My friends—and I think they are not a few—know that I am incapable of doing anything to deserve such a visitation of Lord Stamford's wrath; and they know that if I was doing anything inconsistent with my position as a tenant, that half a word of remonstrance would have set me right."

We have yet more positive proof that Mr. Everard had no idea that he was to leave Groby. Something that assures us the offence, if there really be one, was at least unintentional: "Feeling myself perfectly sure that I should have justice done me, I did not hesitate in my improvements to learn what my increased rent would be, but proceeded with deep draining, building, carting manure from Leicester and lime from Breedon. I had likewise applied to the agent of my landlord for materials to erect some new stables, and sheds for twenty extra cows, at my own expense, the increased capabilities of my farm rendering increased accommodation necessary. And at the time I received the notice I had lying upon my farm 700 tons of night-soil carted from Leicester, and 120 tons of Breedon lime, and was in the act of erecting the new entrance-approach to my house."

And for all this, in return for all this, to "get out" all this, Mr. Everard has a six months' notice to quit. Of course he at once sells off his stock, and "never," says Mr. Holland, the auctioneer, "had he stood over so fine a sample of stock." But what more can he do or expect? There are no leases and there is no "custom" in Leicestershire. The practice is thus summed up in Shaw and Corbet's Digest:

Mr. George Kilby, Tenant-farmer.

What is the time of entry upon farms in Leicestershire? At Lady-day, principally.

Does the tenant take the succeeding wheat crop? No; it is valued to the incoming tenant.

Does he pay anything for the turnip crop that is fed off? Nothing at all.

To whom does the dung belong? To the landlord.

Is there any compensation to the outgoing tenant for any improvements that he may have made? None that I am aware of.

Does any custom exist beyond paying for seed and labour? There is nothing beyond that.

Is there anything paid for the use of oil-cake? I have never known anything allowed for that, neither is there a vast quantity of it used.

And nothing is allowed for draining? I never knew it.

Then there is no allowance beyond the simple seed and labour? No; just for that, but for nothing else whatever.

Are not the customs of the country very various? Yes, the custom of the country is almost nothing.

Are the farms generally held by lease, or at will? At will mostly; there are very few farms leased there indeed.

Mr. Edward Woollett Wilmot, Agent and Tenant-farmer.

You once farmed on the borders of Leicestershire and Rutland? Yes.

Did you drain a good deal there? Yes.

At Pickwell? Yes.

Did you give up that farm a very short time afterwards? Yes; and I never received a sixpence. The custom of the country did not allow anything either for artificial manure, drainage, or buildings.

Had you laid out money in building? Yes.

And in artificial manure? Yes; and in fencing, building, and inclosing the land.

Without receiving one farthing? Yes.

In Leicestershire there is little or no tenant-right.

The dung belongs to the landlord. There is no compensation for improvements. Nothing is allowed for draining. For fencing, building, and artificial manure you don't receive one farthing. Mr. Everard has nothing but his "confidence in his landlord". That is, if he has not more means than the majority of three-hundred-acre farmers, he is a ruined man. Still, of sympathy he is sure enough, from all classes. One of the gentlemen of the county, Mr. Frewen, has already taken up his case. At the sale, too, a brother-farmer, Mr. Allen, of Thurmaston, "wished it to be known throughout the length and breadth of Leicestershire, that, if landlords treated their tenants as Mr. Everard had been served, they should not sport over his land. He did say this one thing, that if his land lay adjoining to covers, and Lord Stamford came upon it, he would send him 'right about face.' He thought that was a sample of what Englishmen ought to do!" Lord Stamford opens another season in Leicestershire on this day week. Another friend, Mr. Kirkman, proposed that a Farmers' Fund should be raised, for conducting an action, to which he himself would give ten pounds. But perhaps the best commentary comes from Mr. Everard's two brothers. One, a commercial man, said, "Farmers should not suffer landlords to have modern rents and feudal privileges." The other declared that "if farmers were to keep pace with the times, they must have leases and TENANT-RIGHT; and here was a striking instance of the need of such."

We tell the story as a striking instance. Every tenant farmer should be able to draw his own moral from it. It only illustrates what we have said over and over again. No one, in justice to himself and his family, should put blind, helpless confidence in another. It creates a power that is twice cursed—alike derogatory to him that gives, and to him that uses it. It is just a fortnight since that we opened a leader with these two suggestive sentences from Sir John Pakington's speech at Worcester. They will come as appropriately as a conclusion to this:—"THE AGRICULTURAL QUESTION MAY BE SUMMED UP IN THREE EXPRESSIVE WORDS—SKILL, CAPITAL, AND SECURITY TO ENSURE PROSPERITY, A FARMER MUST POSSESS SOME SKILL, JUDICIOUSLY APPLY HIS CAPITAL, AND HE HAS A RIGHT TO EXPECT SECURITY, EITHER IN LONG LEASES, OR IN COMPENSATION FOR UNEXHAUSTED IMPROVEMENTS."

REVIEW.

"IS KILLING MURDER?" A KEY TO THE ADULTERATION OF OUR DAILY FOOD.

Compiled by WM. DALTON. London, 1857.

Such is the title of the little work before us: and, certainly, its contents are enough to alarm every one at all of a nervous temperament; for, if we are to believe the evidence adduced—and there is not the slightest cause to doubt it—every article of food we purchase, every condiment, every drug, is made the subject of adulteration, some to an extent, and with such materials, as eminently to endanger health, and even life itself. Men of the first character and standing, either as practical chemists or in the medical profession, have bestowed weeks and months of the most careful, deliberate, and impartial investigation; and have been driven to the conviction that the majority of British tradesmen have—whether wittingly or otherwise, is best known to themselves—been dealing out disease and death, in various forms, amongst the whole population of the United Kingdom, but especially of the metropolitan districts, by the adulteration of all the necessaries of life.

Nor is this confined to one or two of the tradesmen in one or two branches of trade. Dr. Hassall and Dr. Normandy (the latter a Professor of Analytical Chemistry) have gone to work in the most wholesale manner, making a complete sweepstake of the tradesmen in a neighbourhood—obtaining samples from each, of various articles, and finding them, by testing, all adulterated. Thus, of two lots of samples of bread of 25 each, every sample contained alum. Chalk, clay, potato-starch, &c., &c., are used by some of the bakers in the low neighbourhoods; and whitening has been known to be used in large quantities in bread. The less pernicious, but still fraudulent, practice of mixing barley, beans, peas, and potato farina with wheaten flour, is also practised by the millers to an enormous extent. The testimony of the two gentlemen we have named is corroborated by F. C. Calvert, Esq., Professor of Chemistry at the Royal Institution, Manchester; Dr. W. Carpenter, Examiner in Physiology in the University of London; Mr. Julian Rogers, Analytical Chemist; and last, not least, Dr. Letheby, Analyst and Medical Officer for the City of London; who all speak both to the facts and to the deleterious character of the various ingredients put into bread.

We have placed this article foremost, because it is of the first importance. But we must not stop here. Out of 30 samples of oatmeal, 16 were adulterated with barley-meal. Tea is almost universally mixed with injurious ingredients, both in China before shipment, and in England after arrival. Coffee, chocolate, cocoa, undergo similar treatment. Out of 42 samples of coffee tested by Dr. Hassall, only 11 were pure; and of another series of 54, only 5 were pure. Beer, of all kinds, is adulterated; but in *all cases* by the publicans, and not by the brewers. The materials used by the retailers is of a decidedly poisonous character, and dangerous to health and life; sulphate of iron and *nux vomica*, coculus Indicus, alum, tobacco juice, grains of paradise, &c., have all been detected by different chemists in liquors which ought to be *malt* liquors. Spirits, especially gin, are largely tampered with. "There can be no doubt," says Dr. Hassall, "that whatever may be the evil consequences of drinking gin, those consequences are materially augmented by the use of these mixtures. I think no human stomach could stand the combined effects of alcohol and cayenne pepper" (p. 65.)

Port wine, which never saw Oporto, is sold in abundance by the London wine merchants. It is a composition of bad Italian wine, geropiga, elder berries' extract, Lisbon grapes, brown sugar, brandy, bitter almonds, logwood, sloes, red sanders, Brazil wood, alum, catechu, &c. Such is our port wine. Mustard is adulterated with turmeric, wheaten flour, cayenne pepper, and ginger. We are ourselves aware that mustard is commonly sold at one price, whatever the quality may be; but a discount is allowed off it, ranging from 5 to 50 per cent., according to the quality. Of 42 samples examined by Dr. Hassall, the whole were adulterated, more or less, with turmeric and wheat flour. Vinegar is made from sulphuric acid, or mixed with it and other pernicious ingredients. In some cases corrosive sublimate has been used. Pepper, both cayenne and black, are largely adulterated. Out of 28 samples of the former 24 were found impure, the mixtures being red lead, Venetian red, red ochre, cinnabar, vermilion, ground rice, turmeric, and a red ferruginous earth. The chemical officer of the Deptford Victualling Office examined 1,116 samples of pepper, of which 540 were genuine and 576 adulterated. All spices and condiments are thus mixed with substances, many of which are poisonous, and by being constantly taken into the stomach, affect health, and thereby shorten life.

Raw or moist sugar is adulterated with flour and sand; refined or loaf and crystallized sugar, with alum, sulphate of lead, lime, &c. But it is in confectionary that the poisons of the most deadly character are freely used—Chromate of lead, red lead, red oxide of ditto, vermilion, cinnabar, ferruginous earths, indigo, Prussian blue, cyanide of iron, sulphuret of sodium, Brunswick greens, carbonate of copper, arsenite of copper, &c. No check is placed upon the use of these deleterious substances, and thus poisoning by wholesale is going on unchecked, especially among children, who, attracted by the gay colours, purchase the sweets with their holiday pence, and lay the foundation of diseases which puzzle the medical men to account for their origin. Dr. Letheby says—"A case of poisoning occurred at the London Hospital about two years ago: about twenty people were poisoned by confectionary which was sold by a Jew in the neighbourhood of Petticoat Lane. He had bought up the refuse stock of a large city confectioner, and distributed it among the people of that neighbourhood, and twenty-four of them were poisoned by it. They were brought into hospital, and emetics administered to them. The contents of the stomach were sent to me to analyze, and I discovered in them lead and arsenic; and this was found, upon inquiry, to be the cause. *Every article of confectionary in this country is poisoned in this way!*"

We could go on and show from this book that the same nefarious practice is carried into the manufacture or preparation of almost (if not quite) all that we eat or drink. Pickles, preserves, potted-meats, fish, and sauces, milk, butter, cheese, drugs, and medicaments of all kinds; arrow-root, lime juice, tobacco, snuff, &c., are all alike doctored by the retailers before they reach the public. But we have no room for further particularizing, and must refer the reader to the shilling volume before us, assuring them that they will find its perusal deeply interesting and instructive.

We cannot, however, close this notice without expressing our regret that the character of the British tradesman has been sunk so low from the position it formerly held, that for the sake of a little extra profit so reckless a system of fraud should be resorted to by so numerous a body of the trading community, as to give it a general character, making honest trading the *exception*, and dishonesty the *rule*, throughout every department of dealing in the necessaries of life.

PROFESSOR WAY—ELECTRIC LIGHT.

We learn that the launch of the Great Eastern steam-ship, which it is expected will take place early in the coming month, will be effected under the brilliancy of the electric light, as far as the moving of this wondrous iron monster is done during the night, and which must occupy a considerable portion of the darker hours, seeing that it will require a period of at least 16 from the moment of her first leaving the upper stays or cradle until she quietly rides in her future element. It is to be presumed, therefore, that the commencement will be during the night, and that her final glide into the river may be witnessed by thousands in the clear light of day. The use of the electric light will therefore be of great moment in this important operation, in which, it may be said, the whole nautical world is interested. On the other hand, it will fully test the merits of the various improvements made in this system of removing darkness, for if the lights to be erected burn steadily and brilliantly through the night they will meet the requirements of the Trinity House as respects the illuminating power for lighthouses. The brilliancy of the electric light has never been questioned, and the great difficulty hitherto has been in securing density and steadiness. These points are overcome, we are assured, by the application of mercury, instead of carbon, and that a lunar light, pure, dense, steady, and continuous, is now obtained. This, as we have already said, will now be fully and publicly tested. The point to be determined is even of more universal interest than the Great Eastern steam-ship itself; for, if what is represented is established beyond controversy or dispute, a great national boon will be secured. Nothing can be of greater value to this country than an efficient and powerful light for the coast. Those now in use are not sufficiently effective, and during fogs and severe weather are frequently useless beyond the immediate precincts of the lighthouses; whereas the new light—the mercurio-electric we suppose it may be called—is unchangeable in colour, and its penetrating powers in fog and thick weather are represented as perfectly extraordinary. Little has been said or is known of this new plan of overcoming the difficulties which carbon light presented, but the discoverers have been persevering in their trials and tests so as to make every point perfect before its submission to public display. We understand that the discovery is due to Professor Way, but that other gentlemen identified with the prosecution of the question of electric light have assisted in bringing the matter to its present state of perfection. The test to which it is to be put is a bold one, and is of itself an earnest of the sincerity of those who consider it perfect for all useful purposes. We trust their efforts will be crowned with success as brilliant as their own light, not only on their account, but as a matter of national import and interest. It will be a grand feature indeed in this extraordinary feat of launching this monster ship.—*Mining Journal.*

EDUCATE YOUR FARMERS' SONS, AND IMPROVE THE CONDITION OF THE LABOURING CLASSES.

At the meeting of the Bridgnorth Agricultural Society, the Earl of Dartmouth said:

He was tempted to ask their indulgence while he made a few remarks which may possibly have a bearing upon practical farming, of which perhaps every person in that room was more qualified to speak than himself. He wished to impress upon them how much the welfare of the country generally, and the agricultural portion of the community more especially, depended upon education. He believed it was generally acknowledged that there were not the same facilities for the tenant farmer to educate his children as there were for almost every other class. He trusted, however, this evil was fast going away, and he would himself do all in his power to promote a proper scheme of education. But there was considerable doubt as to what was the proper system. It had been urged—whether rightly or wrongly he did not say—against some of the proposed measures, that they were intended to advance a particular party to the church. He regretted that such an opinion should ever have been entertained, and still more if there were any grounds for such a belief. The evil example set by these dissensions it would be well to avoid; and endeavour to profit by the mistakes of those who had attempted to establish a good scheme of education. The education they wanted was not that kind of over education which unfits a man for his station, puffs him up, makes him proud to those of his own class, overbearing to those he may consider his inferiors, insulting to his superiors, and an useless member of society. What is wanted is a good, sound, practical, and religious education, which should make a man a good christian, and that should give him—whatever his station may be—some of the feelings of a gentleman. No man, he contended, could do his duty properly unless properly taught. For instance, it was only by education, that the sons of farmers could do their work thoroughly. They should have what by some was called a smattering of the elements of chemistry, so as to ascertain for themselves what kind of manure was best suited to the geology of their farms; what sort of crop most exhausted the soil; and what was best adapted to recover the land from its exhausted state. The farmer's son should also know how to keep a clear and correct account against himself and against his farm; he ought also to acquire a knowledge of common things. He (the noble Chairman) said it without anything like reproach, but he thought it would be well if tenants' sons knew if corn ricks were left in the field for an unlimited period they would find rats there when they remove it. It would be also well to learn that dead stuff put into a live hedge will not grow; and that a hedge planted upon a bank would not have the same chance of vegetating as if planted on lower ground. He also thought they should be taught—for some of them may become parish officers—that the best material for mending roads is not soft sand, even if there were large round stones plentifully strewn about it. It was also important to teach them that good crops and weeds could not exist together, even where the land was highly manured. The chairman said he was not a practical farmer: these were merely a few things which had struck him; and these suggestions he threw out to show them what might be done under an improved system of education. Descending a little lower, he would for a moment speak of the labourers; and being connected with a large and populous manufacturing district, he believed that everyone in his station should take all the opportunities he possibly could of improving the condition of our labouring classes. How could they expect that a man should go fresh to his day's labour, if he rose from a squalid bed in an ill-ventilated chamber, where, it may be, his wife and family had slept too? Men would always leave their homes for the beer-shop unless their homes were made happy and comfortable. What could be expected but that a man should leave his wretched home for the beer-house which was well lighted and warm? But he here met with dissolute companions; and in addition to not giving his master a proper return for his wages, he often became a poacher and vagabond, if not something worse. The value of education was exemplified by Lord Hatherton's school, where the boys received instruction for two hours—from six to eight—before going to work, and they did more work than those who worked longer, but did not go to school.

PRACTICAL TESTIMONY TO THE VALUE OF THE STEAM PLOUGH.—Almost at the close of the Evesham Society's meeting, where practical discussion elicited much valuable agricultural information, Mr. Randell was called on to give his experience in the use and value of the steam plough. He said: Although late in the evening, he would most willingly state what few facts he had gathered from his experience of steam ploughing so far. The quantity of land which they could plough per day when regularly employed at work was, including stoppages, about four acres. The cost of this in labour, coal, blacksmith's work, and so forth, was nearly as possible £1 per day, or 5s. per acre. The cost of the steam engine, with the plough and apparatus, was about £400; and the question then was, what interest should be charged upon it, including wear and tear. He had fixed 15 per cent., which would amount to about £60; and supposing the plough was worked 150 days in the year, and accomplishing in that time something like 500 acres of ploughing, it would amount to 2s. 6d. more, or, in the whole, to 7s. 6d. per acre. But it was most important to consider the manner in which the ground was left after the ploughing. It was not merely that the land had been ploughed, but it had been ploughed back again, as it were; and the "scutch," instead of being buried at the bottom, was brought to the surface, where it was left. If they could not, therefore, keep their land clean after the use of such an instrument, they must be very clumsy fellows indeed. Upon clay land the advantages were greater than upon such land as they had tried it on that day. He had broken up hilly land this year with the steam plough which he could not have done with horse labour, and a fallow had thus been made most effectually; indeed, it was the best piece of agriculture he had ever accomplished. As regarded the supply of a liberal quantity of manure to the land, he would state that that field never had manure upon it in the memory of man, yet it had grown wheat, at twelve bags to the acre. His impression was, that clay land could be farmed, in many respects, without manure. He was so delighted with the steam plough, and had such a sense of obligation to the inventors, that he could not find words to express his admiration of its merits. He was quite satisfied he should now make a farmer.

SCIENCE AND THE FARMER.

The farmer should understand geology. He should know the composition and structure of the rocks which constitute so large a part of the soil which he cultivates. He should know the nature of the rocks in all the region around him, and what kind of soil they will produce, when worn down by the action of the sun and rain and frost. If the mountains and hills that look down upon his farm contain marble or granite or slate or iron, he should know that these minerals, which have been upheaved from the bowels of the earth, are being annually spread over the valleys and plains that lie at their feet, by the drenching rains and melting snows which wash their declivities. He should know how to select those soils whose mineral composition is best suited to particular crops, and to determine when they contain mineral elements that unfit them for his purpose.

He should know what is a sandy loam, and what a clayey loam, and of what each consists. He should know what is an alluvial soil, and what mineral elements it contains in any given locality. The farmer should understand the leading principles of chemistry in general, and all about those particular principles that are applicable to agriculture. The earth is not a mere dead mass of matter. It is a vast chemical laboratory, filled with various and strange materials, full of activity and motion, in which composition and decomposition and new combinations are constantly going on. To-day it receives accessions and influences from the heavens: to-morrow it throws off newly-formed elements, that are carried into the ocean, and deposited upon distant shores. The earth is almost a living creature, and when quickened by atmospheric influences, she brings forth innumerable living things, infinitely diversified in form, in hue, and fragrance, and each derives from her bosom the nutriment that is suited to its character and wants; truly is she called the mother of all living things. The cultivator of the earth should surely know something of its nature, its elements, its affinities, and its diseases.

The farmer should be a botanist. This is the natural science of the agriculturist. Can he be content to spend his life in ignorance of the names and properties and distinguishing characteristics of the trees and shrubs and flowers that are so lavishly spread around him, painting his fields and woods with their thousand hues, and rendering this outward world a scene of beauty? And how does the seed germinate, and the tender leaf unfold itself? and in what order are the several parts of the flower developed? How is the blossom impregnated and the fruit formed? What will injure and what improve each plant? How may plants be improved by engrafting, by inoculation, by crossing? How may new varieties be obtained, and old ones be made better? Can the farmer be content to leave questions such as these unanswered?

But vegetable physiology alone should not satisfy him. He has in his charge, and appropriated to his use, some of the noblest animals upon the earth. They are his companions through life, and by their labour, or the products of their bodies, contribute largely to his happiness and comfort. He should make himself acquainted with the structure and uses of their various organs. He should know how often their hearts beat, and how often they breathe in a state of health, that he may judge how far, at any time, they deviate from the healthy standard. He should know the absolute and relative position of all the organs, that he may the better determine the seat of disease, and with more certainty apply his remedies. He should know how the fat is deposited; how the bones are formed, and how the muscles; and what food or treatment will contribute to the most rapid growth of each. And then the knowledge of different races, and their curious histories, and their several peculiarities, are all highly important to the breeder of stock. The farmer should have a knowledge of the diseases of his animals, and of the proper remedies, and should be able to perform all the more common surgical operations. Many a fine animal has been slaughtered, because its owner could not set a bone, or bandage a wound.

The farmer should carefully observe the habits of animals, birds, and insects. Who else has so good an opportunity as he to do this? He should especially study the habits and nature of the insects that are injurious to vegetation, that he may be the better able to defend his crops from their ravages. He can scarcely be expected to be familiar with the whole subject of entomology; but he should carefully study those insects that are found in his own neighbourhood, and upon his own premises, and note with accuracy the result of his observations, for the benefit of himself and his neighbours.

The farmer should understand the general principles of mechanics, and particularly those that relate to the structure and use of agricultural implements. In ancient times, no man was considered an accomplished ploughman, until he could construct his own plough. In modern times, the division of labour, and the uses of machinery have rendered this qualification unnecessary. But he should understand the true principle upon which the plough, and every other implement he uses, should be constructed, that he may discover any defects in their working, and be able to suggest any improvements which they need. He should be able to use tools in a workmanlike manner, and thus save many a blacksmith's and tool-maker's bill, which he would otherwise have to pay. He should make himself familiar with all these, and many other branches of scientific knowledge. The study of these subjects will be to him an unfailing source of pleasure, and cannot fail to improve and refine all his powers and sensibilities. There is no branch of knowledge that will not be serviceable to him. There is none from which he cannot derive some hint or some law that may be applicable to some one of his varied pursuits; and they will all tend to refine his feelings, to enlarge his intellect, and to elevate him in the scale of being; and there is scarcely a branch of physical science that may not be made to put money into his pocket, if this is the leading object which he is pursuing.

When our young farmers shall all be well instructed in the general principles of scientific knowledge, individuals among them will acquire and develop a taste for special scientific pursuits. One will become distinguished as a geologist, another as an agricultural chemist; a third will acquire fame as a botanist, and a fourth as an entomologist; a fifth will be distinguished as an inventor of agricultural implement; another will obtain a fortune for himself, and confer inestimable benefits upon his country, by the introduction of new varieties of plants and fruits; while another will devote himself to the introduction of new breeds of animals, or to the improvement of those already existing. If our farmers would become self-instructors, and study and think for themselves, no profession would be more honourable, or have more weight in society, or be more eagerly sought after by the active and intelligent of all classes. Farming would cease to be mere drudgery, and those who pursue it, to be "of the earth, earthy." All farm operations would be based upon scientific knowledge. New principles, new processes, and important and valuable results would be brought out, that would confer fame and fortune on their discoverers, and great benefits upon the human race. We should have farmers who would be known as the authors of valuable works, farmers who would achieve a high rank in intellectual improvement, which would fit them for the most honourable and dignified positions in society. R. —New England Farmer.

AN EXTRAORDINARY RUTLAND RAM OF THE LINCOLNSHIRE BREED.

Sir,—As your great Agricultural Journal gives every kind of sheep their due, I beg to inform you that a wonderful three-shear ram was exhibited on Saturday last, in Peterborough Market, in front of the Corn Exchange. It struck many farmers with admiration, to see a gigantic sheep of the pure Bakewell form or cast with a heavy coat of Lincolnshire wool on his back—quite a model or example sheep to every breeder who means profit. Many judges of the first-magnitude declared him to be the best sheep they had ever seen. This extraordinary animal was bred by Mr. John Stokes, of Caldecoat, Rutland. The said ram has been shown at Uppingham, Rockingham Fair, and at Kettering Fair. Mr. Stokes was offered £70 for him, which high price led him to send him to Peterborough for exhibition. Mr. Stokes has bred from the far-famed flocks of Mr. John Kirkham, of Hagnaby, and Mrs. Casswell, of Pointon; and Mr. Stokes' ram does great credit to both flocks, because the said ram might be made half as fat again as he is, having laid half the summer with ewes and lambs, and without shade all the hot weather. He has never been *pampered, house, or stall-fed.* Mr. Stokes uses him himself this year; last year he was let to a celebrated ram breeder, Mr. Painter, of Burleigh, near Oakham. This ram clearly proves that a Bakewell frame may be obtained with a Lincolnshire coat of wool on his back, which is the most profitable kind of sheep bred.

Peterborough, Oct. 14. SAMUEL ARNSBY.

THE ADVANTAGES OF MECHANICS AND SCIENCE TO AGRICULTURE.—J. B. Coulson, Esq., the chairman at the South Tyne Agricultural Society's meeting, begged them not to accuse him of indulging in language too poetical if he described the agricultural interest as the very heart and fountain of life, as he would designate our manufactures and world-wide commerce to be the bones and sinews of our great empire. And really, as when the body is perfect and the heart is healthy and well, so will the sinew and muscle be firm and elastic, even so when agriculture is prosperous our commerce and trade are flourishing. Vast as were the interests involved in the two latter sources of the prosperity of this country, he believed he was only stating what was the truth when he said that three-fifths of the entire population of these realms were either directly or indirectly dependent upon agriculture. He thought he might very properly describe this as the birth-day of the South Tyne Agricultural Society; and although the child was in the first stage of its infancy, he might venture to say that it had already given incontestable proofs of its vitality and vigour, and doubtless under the fostering care of the skilful nurses who had watched it into the world, it would ere long become—he would not say a giant, but at any rate a man of robust health, of stalwart form and steadfast purpose. But he must not indulge too long in this figurative style of language, for he wished it to be clearly understood that he considered those gentlemen who had originated the society to be benefactors to the district, and deserving of the greatest honour and credit, and with all his heart he trusted that the good work so well begun would go on and prosper. He was well aware of the difficulties which must have attended their labours, and they were of no ordinary character. In many parts of the county similar societies were already established, and each had its annual exhibition, which they would not yield to any other, and to which people flocked in numbers, and, by the force of habit, as each anniversary came round, again returned as they had been accustomed. Let them hope, however, that each year would add to the influence of the South Tyne Agricultural Society, for he was sure that in proportion as it spread, its utility and importance would be increased. All things must have a commencement, and none knew better than they did from what small beginnings mighty things arose. Who amongst them could have forseen that from the mere vapours of hot water that most stupendous power in the hands of man would have arisen? Who would have believed, a few years ago, that the simple and apparently feeble element which was known only by its quiet murmurings and gentle simmerings to soothe the cares of our grandmothers whilst sitting at their tea, would soon become the mighty agency we now behold it, carrying on the trade of the world, and connecting the most distant climes in intimate and friendly relations? Who, he repeated, could have anticipated such mighty results from so trifling a cause? and though he was not so sanguine as to expect the South Tyne Agricultural Association to take such rapid strides as the giant Steam, yet he thought it, too, contained the elements of expansion, which would in a short time extend its power and influence over the county—in a word, that it would grow with their growth, and gain vigour as it grew. Man was not allowed to control the seasons; he could not guide the cloud, nor stay the storm; and thus was the farmer sorely tried by the fickleness of the climate. But though he had not the power to influence the seasons, yet under the auspices of agricultural societies, such as had just been established in that neighbourhood, and with their assistance, many of those evils which were incidental to the climate and the soil farmers were enabled to avert. Such societies as these were calculated to stimulate exertion, excite competition, diffuse agricultural knowledge, and by placing the wonderful and almost all-powerful resources of mechanics and science within the reach of the farmer, to enable him to overcome almost every difficulty which had hitherto existed. By the mechanical contrivances which they were the means of introducing into the country, agriculturists were enabled to shorten labour, and to take advantage of those brief periods of sunshine which even in this climate we were sometimes favoured with. The harvest had commenced with fine weather; but soon the cold winds came, and the rain descended, disappointing and almost dispiriting the farmer at a time when he most needed an uncloudy sky; again, however, they had sunshine, and it would be their own faults if they did not take advantage of it. It was by the application of mechanical contrivances that they were enabled to get through the business of the farm with expedition; those contrivances it was the especial duty of these societies to encourage, but above all things he hoped they would be instrumental in overcoming that propensity for procrastination which too much prevailed amongst agriculturists, and induce them to seize upon the favourable moment to turn everything to the best advantage, not only for their own sakes, but also for the benefit of the country.

A LANDLORD'S ADVICE.—The Earl of Lonsdale, in returning thanks for his health being enthusiastically drunk at the West Cumberland Agricultural Society, said:—"I am glad to observe that in this county, and, indeed, I may say all over the kingdom, people's minds have been awakened, and they have been led to appreciate the value of their native soil. Great improvements have been made of late years, due principally to the energy of individuals; at the same time I may say with truth that at present there is more enterprise, more skill and activity, and, above all, more capital applied to the cultivation of the soil than has been known at any former period. Gentlemen, were I to give a word of advice to landed proprietors, I should recommend them to hold and keep what they have, for there seems to be every prospect of land increasing in value. Population is augmenting, whilst consumption is increasing in proportion; and, in addition to that, there is that great influx of gold from California and Australia—an influx which in former times has always occasioned a rise in the value of land. As to my own fancies in agriculture, were I again to venture upon offering you good advice, it would be that you should hold a good deal to the dairy farm. Such produce as butter and mutton is increasing in price, and is likely to increase still more, and upon these commodities you have the draw back of foreign competition. In making the remark I know that I am expressing a sentiment contrary to the now generally received opinion, but I still believe that there is a great advantage in having no competition beyond ourselves. Speaking of dairy farms as a question of profit, I should say that it is upon grass lands this country should chiefly rely. This country, I say, is particularly rich in grass and green crops, at the same time it appears to me that there is some deficiency in the proper attention which ought to be paid to them. If you would allow me to make a suggestion in reference to this subject, I would do so in the presence of the managers of the Whitehaven Agricultural Society, and it is that they should give a prize to the best-managed farm. If they will give a prize for the best-managed farm, I will gladly follow it up by offering a premium for the best forty acres of good grass land, free from weeds and thistles and dockins; for of all the beautiful things in nature, to my perceptions, a fine clean grass field is amongst the first. And what is perhaps more to the purpose in these times—I believe it to be quite as profitable as any other species of farming. This country is well adapted to the cultivation of green crops, and Cumberland is especially favoured. We know that good crops of turnips and mangel wurzel are not to be raised by half measures. They must be well cleaned and well manured; you must even be prodigal in manure if you wish to excel, and in that respect it is well-known we have immense facilities beyond all other counties."

AN IRISH LANDLORD ON THE PAST AND PRESENT OF IRELAND—TENANTS' DUTIES AND LANDLORDS' DUTIES.—At the County Carlow Agricultural Show, HENRY BRUEN, Esq., M.P., said:—"When they considered the improvement that had been going on in Ireland for some years past—of the great strides made in the improvement of agriculture; when they considered the short time in which they had accomplished that happy change—must it not be gratifying to all farmers? England had been, for the last two hundred years, greatly progressing in this work of improvement. What was the state of Ireland two hundred years ago? Why, except the castles at Leighlin-bridge, Shrule, and other places, there was no protection for the people; so that the poor man who had a cow or a sheep was liable to be pounced upon, and his little stock carried off by the O'Rourke's, or some of those marauding gangs that then infested the country. Even sixty years ago they were busy cutting one another's throats; indeed, he was correct in stating that the first traceable advance made by the people of this country in agriculture was dated so late as twenty-five years back. In that short time they could almost compete with their English neighbours, although they were two hundred years a-head of them. He was at a sale in the county Meath some time ago, when an English gentleman, who was present, declared that the sheep exhibited there for sale were such as would have fetched fabulous prices if they were in England. All this was most satisfactory, and they had reason to hope for further improvement. If they did this in twenty years, how soon might they not easily surpass England? Their tillage was not what it ought to be. They had got small fields, crooked fences, and half of the land was deprived of its fertility for want of manure. It was true that in England the farmers had a decided advantage over their brethren in Ireland, in having plenty of capital. There was also a great deficiency in the actual working of the ground. It was more of scratching than ploughing they had in this country—a great deal of ploughing and too much scratching. They could mend that. He did not think they could make the tenant do everything. The landlord must do his share" (tremendous cheering).—A Voice: "That is putting the saddle on the right horse."—Mr. Bruen observed that "they must all do their own part. The draining of land and building of out-offices should be done by the landlord. They should have a better and greater variety of crops, and though, unfortunately, they had not the same abundance of capital that their English neighbours had, to enable them to effect all those things at once—though they could not hope that this could be done in one or two years, yet, he trusted, by the blessing of Providence, there would be plenty of capital in the country to improve and cultivate the land. He had one more cause of congratulation, and that was: if this society had done no other good than that of bringing together the different gentlemen he saw around him that night, to exchange their opinions and ideas in a friendly manner, and becoming better known to each other than they ever had been, it would have effected much good to the landlord and the tenant-farmer classes."

CALENDAR OF AGRICULTURE.

All crops being now secured, the attention of the farmer is directed to the manipulating and disposal of these crops, and to the preparation required for those of the ensuing year. Thrash regularly once or twice a week, which will afford fresh provender for the cattle, and for being cut into chaff; sell and deliver all grains as thrashed; laying a store in the granary very seldom produces any gain. Lay in the granary a quantity of oats for horse-feed, not long thrashed, as the grain acquires a musty smell; finish the sowing of wheat, if any remains undone from last month; continue draining on grass lands; on fallow grounds the drains may be cut to a half-depth or more.

Attend to fattening cattle in the yards and to sheep in the fields; litter the yards frequently and thinly. When arable lands are too wet, remove the sheep to a dry field, and carry the turnips to them.

Feed pigs with steamed and raw food, as has been directed. Be very kind to young horses; allow them a yard and shed—two or three together—and tender food, mixed or steamed, as potatoes, grains, and bran. The first winter's treatment has great effect on the future growth of all young animals; carrots—raw or steamed—are good food for horses. The calves of the year also require a kind attention; a dry and warm bed, ample and regular foddering, and a fresh supply of water.

Lay dung and composts on grass lands, and flood water-meadows.

Begin to cut underwoods and forest trees, plant all arborescent plants, make new hedges and repair old ones, repair roads, scour ditches, and gather dung of every kind.

In fine weather, fallow the lands for next year's green crops; plough stubbles, and fallow with the subsoil plough. Raise turnips for the store pit at the homestead, lay the roots in a longitudinal heap, thatch with straw, and tie down with ropes; have at least two weeks' supply in store; give the tops and small roots to the store flocks, as calves in the yards, and ewes in the fields.

Feed poultry with light grains, and with steamed potatoes mixed with meals, and given in a trough placed in a shelter shed; warmth is essential to these animals.

THE POTATO DISEASE.—Mr. James Drummond, gardener, Cameron Bank, Edinburgh, having studied the nature of this calamity for a number of years, and the various remedies suggested, propounds as the true theory of the cause of disease the unnatural system of cutting the tuber, and planting these dismembered portions year after year, thus destroying the vitality of the plant, and rendering it liable to contract disease. In proof of the above, he instances the new variety of potato called "Regent," which was introduced after the failure in 1846, and remained sound for several years, but has now given way similar to the older varieties. He proposes, as the only remedy, to renew the plant from the native seed gathered from the wild potato, which grows abundantly in the mountains of Chili and Peru, in South America, as he is confident from information obtained that the plant in its natural state has never become infected with disease. In two years after sowing the seed, it is believed a matured crop of healthy potatoes would be produced; and these should be planted whole on land not highly manured, and widely set in the fields. If it can be shown that the wild potato has remained free from disease while the cultivated plant has suffered, there is every hope that a renewal as proposed would be attended with success. Mr. Drummond is very desirous that the subject should be fairly investigated, and his views criticized as to the method he proposes.

BALLINASLOE GREAT AUTUMN FAIR.

The sheep fair commenced on Monday morning with a very brisk demand for wethers, and rather slack for ewes. The supply was rather short of last year's—some of the best judges said from 10,000 to 15,000. There never was a greater number of buyers in the park, but it was not until the last hour that anything like business was done. The sales then, however, proceeded rapidly. The prices of wethers were fully 5s. to 6s., and in many instances even more, in advance of last year; good ewes also were in brisk demand at an advance of about 2s. 6d. to 3s. over this time twelvemonth; old, poor ewes were not sought after, but maintained about last year's prices. The great demand, however, was for wethers, which were eagerly sought for. A considerable quantity of the Roscommon sheep, especially ewes, were sold at the late new fair of Strokestown, to some extent interfering with the supply in Ballinasloe. The fair commenced about six o'clock in the morning; but, in consequence of the very high prices asked, little or no business was done till about eight o'clock, when the buyers gave way, and business proceeded with great activity from that till the close of the fair.

Total number of sheep sold on Monday	51,172
Last year	70,341
First day, 1855....................	60,929

About 27,000 under the sales on the same day as last year. Most of the wethers were sold at one o'clock, at which time the park was very much thinned.

The sheep fair terminated at an early hour on Tuesday, the number offered for sale being quite insufficient for the demand. As a consequence there was an advance of prices over Monday, and many of those who disposed of their sheep on Monday morning could have got considerably more for their flocks the following day. The Connaught graziers were never so much elated—they were quite flushed with success. High as their anticipations were, they have fully realized them; while the Leinster gentlemen had no alternative but to submit to any terms which the flockmasters on the north side of the Shannon chose to dictate. Wethers were 3s. per head in advance of Monday's prices, and ewes about 2s. dearer. There were instances where the advance was more than double these figures, but they may be taken as a fair average.

SHEEP SOLD AND UNSOLD.

	Sold.	Unsold.	Total.
1856 ..	91,774 ..	5,570 ..	97,344
1857 ..	66,849 ..	924 ..	67,773
Decrease on last year			29,571

The day preceding the horse fair a very large number of horses were exhibited for sale in anticipation of the regular fair. Mr. Faucett sold a hunter to an officer from Greenock at 100 guineas. Mr. A. T. Walker, of Bellair, sold to Mr. Dawson a bay horse at £183 15s. Mr. George Low, of Fairfield, Creggs, sold a bay mare at £120. Mr. Allan Pollock sold two cobs at £70. Mr. Shegog, of Monaghan, sold two horses at £140, and Mr. Jackson, of Monaghan, sold two at £130. Mr. Murray bought an excellent horse at £100. Mr. M'Grane bought four horses averaging £100 each.

The horse fair took place on Wednesday, and, owing to the inclement state of the weather and other causes, it was altogether a failure. Buyers there were in plenty, but the supply was extremely short, and of first-class animals there was nearly a dearth. Nevertheless, some hunters fetched a high figure, and a few of the best were caught up by English purchasers. Mr. Murray, from Manchester, purchased a horse from Mr. Freeman, of Cork, for something over £300. He also bought a horse for His Imperial Majesty the Emperor of the French for £200 from Sir Robert Gore Booth. Captain Ford, of the 46th Regiment, bought a bay horse for £105. Mr. P. Persse gave £150 for a brown colt. Mr. Magrane got four horses, averaging about £100 each. Mr. Shegog, of Monaghan, sold two horses for £140; and Mr. Jackson, of the same place, a hunter for £130. Mr. George Lowe sold a bay mare for £120. Mr. L. Reynolds, of Dublin, purchased a horse from Lord De Freyne for £140, and one from Mr. Hackett, of Birr, for £130; he also gave for two carriage horses, intended for the Lord Mayor for the ensuing year, £100 and £80 respectively. Animals of an inferior description were nearly altogether unsaleable. No demand for fillies.

The black cattle fair was held on Thursday, and, contrary to expectation, turned out better for the graziers than was anticipated in the earlier part of the week. There was about an average supply of black cattle. Business went on slowly up to 9 o'clock, but in several of the transactions that took place a slight improvement on last year's prices occurred. Some top lots of heifers fetched from 10s. to 20s. more than they did in 1856. Lord Clonmel purchased a magnificent lot of 40 heifers from Mr. Robert D'Arcy for £21 15s. Among them was a beautiful animal, for which Mr. D'Arcy refused £28 some time since. Holders of stock, generally speaking, took fair prices when offered, as last year they were obliged to sell at a fall on the prices offered in the morning. The weather is fine, and promises to continue so.

A letter from Ballinasloe, dated Thursday evening, is as follows:

"After I forwarded my despatch this morning, business went on briskly, and the prime lots of the fair soon changed owners. There was a decrease in the number of cattle of about 3,000 or 4,000, which, it is more than probable, influenced prices. The rates of last year would be an unsafe criterion to judge by, as the sums paid for stock were considerably under what holders had a right to expect, and, therefore, though an advance took place to-day, it was not of a character to demand much observation. Whether it was that they had experience of last year's prices or not, at all events sellers were apparently well satisfied with what they obtained. It is thought to have been under what cattle brought at the neighbouring fairs. On prime lots there was an advance established of about £1, and, on the whole, prices ruled from 10s. to £1 higher than last year.

"I append a return of the number of cattle at Ballinasloe for the last six years:

	Sold.	Unsold.	Total.
1852	12,090	645	12,735
1853	12,219	2,538	14,787
1854	15,570	2,839	18,409
1855	16,237	3,803	20,040
1856	16,540	5,982	22,522

"Most of the cattle on the fair green were disposed of. The day was extremely fine, which was of great advantage. A number of sales of horses were effected, principally of colts for agricultural purposes.

Sold	16,441
Unsold	949
Total	17,390
Decrease on last year	5,000"

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR OCTOBER.

One of the leading features in connexion with the agriculture of the country, and which has formed the subject of much general discussion, is the now ascertained fact that a portion of the potato crop in this country is found to be seriously diseased. On most of the late kinds being raised, it is discovered that nearly, or quite, one-third of the tubers are either greatly deficient in size or much diseased. Unfortunately, this state of things is not confined to one locality or county, and we have had most unfavourable weather for pitting the crop. Still, we must bear in mind that the quantity of potatoes grown to the acre is *very large*; that we are now receiving extensive supplies from the Continent in excellent condition; and that the actual supply for consumption is by no means so limited as we had been led to expect. It cannot be denied but that the failure of the crop must be regarded almost in the light of a national calamity; still it becomes necessary that the growers, who are now obtaining from £4 to £7 per ton for good and useful qualities, should fairly understand their position. It is not by keeping back supplies that will eventually be an advantage to them, because consumption will be directed to other and better kinds of food. The producers of wheat, too, who had been looking forward to great firmness in the quotations, owing to the deficient supply of sound potatoes, would act wisely in considering whether present prices are safe. At this moment appearances favour a further decline in them, owing to the prospect of an immense outflow of wheat and flour from the United States, and the stated intention on the part of the French Government to remove the restrictions on the export of native produce from France. The policy of such a step, in a political sense, may be well doubted. It would, no doubt, lead to exports far beyond the producing power of France, and depress prices here below their present level; but the prohibition would check an advance in France, and it would wholly fail in its intended effect, viz., to produce an extensive influx of silver into the country. However, the corn trade here has felt the effects, not of over-abundance be it observed, or the want of a fair amount of consumption; but from apprehensions on the part of the millers of some important changes in the trade, which may render it dangerous to hold more than average supplies of wheat. The barley trade has likewise been in a depressed state, owing to the small number of foreign orders now on hand for malt spirit and the continued heaviness in the malt trade. Inferior barley is now selling at lower prices than at any period during the last three years.

Such has been the extent of the fall in the value of flour at New York, that ordinary shipping brands may now be purchased there at 18s. 6d. per barrel, consequently may be laid down in England at 21s. 6d. Up to this time, however, as the banks have refused to make advances upon produce, the shipments have been trifling. In Canada the same state of things prevails, and we question much whether shipments will be very large until after the present monetary crisis has passed away.

The new wheats continue to thrash out well; but the prevailing damp weather has greatly interfered with quality. Up to this time the sowing of winter wheat has progressed slowly, in consequence of the saturated condition of the soil and the numerous floods in various parts of the country.

The root crops are turning out tolerably well, yet we find that the crop of turnips is not so heavy as is frequently observed at this time of the year. Apparently, however, there will be an abundant supply of food for cattle during the winter months, especially as the quantity of grass in the pastures is now large, and as the first crop of hay was good both in quantity and quality; besides, there is still a large supply of old hay on hand. The price of that article, however, is very low, and it is difficult to obtain £4 per load for the best meadow hay in London.

The value of nearly all speculative articles has continued to suffer from the effects of a dear money market. Wool has fallen in price, although only about 40,000 bales of colonial will be offered at the next public sales in the metropolis. Linseed and rapeseed, though in but moderate supply, have given way in price, and the trade otherwise has been comparatively heavy.

The growth of hops is now assumed to be equal to 1856: consequently the hop trade has been heavy, and all kinds, except the finest parcels, have sold at very low prices.

In Ireland and Scotland the wheat trade has continued heavy, at further depressed rates. All spring corn has sold on lower terms, and the exports to England have not increased.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Notwithstanding that consumption has been somewhat checked from the disastrous commercial news from the United States, and the unusually high range in the value of money in our discount market, the cattle trade has been in a healthy state throughout the month, and prices generally have ruled high. The supplies of beasts on sale in the whole of our leading markets have been tolerably extensive as to number, but rather deficient in quality; those of sheep have continued limited, and no positive increase has been observed in their general weight. Much stress has been laid upon the small numbers of the latter description of stock exhibited for sale, and not a few persons have contended that there is a very short supply in the country. We freely admit that it is inadequate to meet our greatly increased consuming power; but we may safely conclude that any material falling off in the demand would speedily lead to lower prices, and a considerable increase in the supply. For some time there has been an abundant quantity of grass in the pastures. Sheep have been tolerably free from disease, although large quantities of rain have fallen in most parts of England, and the graziers, consequently, have refrained from adding to the supplies. We have lately read a vast deal of twaddle in some contemporary prints in reference to the present high price of meat, both here and in other parts of England. One *authority* observes:—"It is declared that the live stock of the country is in the hands of the Jews, who intercept it between the cattle dealer and the butcher, and sell it to the latter at an advanced price. There has even been a committee formed for the purpose of counteracting the operations of these supposed middlemen, who are threatened with legal pains and penalties, and we know not what besides. The monopolists have found the metropolitan money market, and, what is more, the metropolitan money market has found them. In this way, no doubt, some of the capitalists here exercise an influence over the live stock that arrives from the country, and it may be that such influence has sometimes a slight effect upon price." Now, any practical man will at once discover the extreme shallowness of this line of argument, and we only refer to it for the purpose of setting the public right on a matter of so much importance to them. In the first place, it is perfectly absurd to state that the live stock of the country is in the hands of the Jews. True, they frequently import cattle, sheep, and calves from Holland and Belgium; but to contend that any body of men, however wealthy, could regulate the price of stock in the London market—which price, be it understood, represents a sum little short of *ten millions sterling annually*—is ridiculous. Who "the committee" here referred to is composed of, and what its peculiar functions are, we are at a loss to imagine. We must now refer to the charge made to the effect that capitalists are exercising an influence over the live stock that arrives into London from the provinces. Perhaps the writer, having made this charge, will inform us how this influence is really exercised, because we ourselves are at a loss to understand upon what principle it is carried out.

Very few losses from disease have been complained of, in our leading counties, from whence, however, the stock has arrived in but middling condition. The importations from the Continent have been on a fair average scale; and we are informed that, in the North of Germany, the epidemic has almost wholly abated in virulence. Apparently, there was at one time much more alarm on the subject than results actually warranted.

The annexed return shows the imports of foreign stock into London during the month:—

Beasts	5,819	head.
Sheep	24,102	,,
Lambs	247	,,
Calves	1,998	,,
Pigs	1,233	,,

IMPORTS AT CORRESPONDING PERIODS.

Oct.	Beasts.	Sheep.	Calves.	Pigs.
1856	8,871	10,502	1,280	895
1855	8,136	21,137	1,358	1,501
1854	6,894	16,328	1,009	1,063
1853	8,190	30,643	1,797	1,585
1852	7,792	26,672	1,350	1,624
1851	5,239	18,688	1,496	1,912

The total supplies of each kind of stock—English, Scotch, Irish, and foreign—have been as follows:—

Beasts	26,833	head.
Cows	497	,,
Sheep	115,409	,,
Calves	1,572	,,
Pigs	2,580	,,

The arrivals of beasts from Lincolnshire, Leicestershire, and Northamptonshire have amounted to 12,200 shorthorns; from other parts of England, 1,260 of various breeds; from Scotland, 29 Scots; and from Ireland, 1,400 oxen.

COMPARISON OF SUPPLIES.

Oct.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1856	24,941	457	103,870	1,956	3,918
1855	24,666	490	118,578	2,748	3,558
1854	26,456	510	146,048	1,900	3,620
1853	27,327	545	145,400	2,517	3,112
1852	26,134	525	132,430	2,556	2,770
1851	22,092	450	119,050	1,990	3,470

Since our last, the price of beef has ranged from 3s. 2d. to 5s.; mutton, 3s. 4d. to 5s. 6d.; veal, 3s. 4d. to 5s. 4d.; and pork, 3s. 6d. to 5s. 4d. per 8lbs., to sink the offal.

COMPARISON OF PRICES.

	Oct., 1853.					Oct., 1854.				
	s.	d.		s.	d.	s.	d.		s.	d.
Beef, from	2	6	to	4	4	3	2	to	5	0
Mutton	2	8	—	5	0	3	2	—	5	0
Veal	3	6	—	4	10	3	0	—	4	8
Pork	3	6	—	4	10	3	4	—	5	0
	Oct., 1855.					Oct., 1856.				
	s.	d.		s.	d.	s.	d.		s.	d.
Beef, from	3	2	to	5	0	2	10	to	4	10
Mutton	3	4	—	5	0	3	6	—	5	2
Veal	3	6	—	5	4	3	6	—	5	4
Pork	3	10	—	5	2	3	6	—	5	2

The supplies of meat on sale in Newgate and Leadenhall markets, slaughtered in the metropolis, have been only moderate; but the arrivals from Scotland and the provinces have been tolerably extensive. An average business has been transacted as follows:—Beef from 2s. 10d. to 4s. 6d., mutton 3s. to 4s. 8d., veal 3s. 4d. to 4s. 8d., pork 3s. 6d. to 5s. 4d. per 8lbs. by the carcase.

WEST GLOUCESTERSHIRE.

The continuation of weather unprecedentedly favourable for agricultural operations, is a boon for which we ought to be truly grateful. In every department, and on all kinds of land there has been a time suitable to every purpose of the season. Scarcely has there been frost of sufficient intensity to tinge the foliage, and judging from the garb of nature, it appears scarcely credible that we are near upon numbering the tenth month of the year. The pasture fields are profuse with keep, and on some dry spots where it was scanty in the summer, the autumnal herbage more than compensates for the deficiency.

The genial temperature too has proved of inestimable value for the growth and development of the root crops, which at one period evinced symptoms of mildew, symptoms however that have very generally disappeared. With more than an average of old hay on hand, and an average crop of last summer's growth most excellently harvested, the prospect of winter keep for stock of all kinds is most favourable. The process of wheat-sowing is in progress, in advance we must add of the generality of seasons; but the land has been in such excellent order, that the opportunity has been taken rather than risk the uncertainty of forthcoming rains. There is some little wheat up, and looking flourishing in the extreme, yet that which has been more recently consigned to the soil, or which may be sown hereafter, providing there is a continuance of fine weather, will most probably have the advantage. The apprehensions concerning the potato crop, so far as this part of the country is implicated, were vastly overrated. The crops when taken up were great, and making allowance for disease, there is a sufficiency of sound ones to estimate nearly, if not quite, an average. There is also another remark to be added, that the tubers if laid by in a sound state, do not go off by keeping, which has often been the case in former years. The abundance of keep tends to enhance the value of stock, both store cattle and sheep realize extravagant prices, which cannot be expected to leave a margin for profit. The price of grain, wheat most emphatically, is a subject which at this season of the year engrosses paramount attention. It is natural that every man having a commodity to sell should be anxious to go to market when he can realize the highest value, and in the hope of making more money, not unfrequently overlooks most important facts. In every part of England the crops have been abundant, certainly above an average, and if there are causes for complaint of damaged grain, to anything like an appreciable extent, the truth of which is questionable, still that which was secured in the best possible condition is greatly in excess; therefore, both the quality and quantity are above an average. Markets have been gradually receding, at a period when farmers are busy preparing for another harvest. The crops are represented as abundant on the Continent and in America, and there appears little cause for the assumption that wheat will maintain its present value, much less rise in price, unless some unforeseen occurrence should intervene. To suppose that the failure of the potato crop is so extensive as to maintain a high price of wheat appears to be a fallacy. There is good reason for believing that the extent of failure is greatly exaggerated, moreover the preceding summer that crop was estimated as a very productive one, yet it had not the effect of lowering the price of wheat. Wheat sowing is proceeding under favourable auspices, an important step towards a good crop; and should the winter be propitious, and the prospect of next year's harvest good, we may reasonably anticipate a reduction of prices.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

BLYTH FAIR.—For the milk cows exhibited very large prices were asked, and not much business transacted. There was a tolerable number of good heifers, particularly those belonging to Mr. Hudson. Ten very good ones, the property of Mr. Ward, of Grove, were turned out unsold. There were also several good steers and many calves; but few changed hands. There was a good show of sheep; and for superior ewes high prices were asked, even as high as three guineas Several were sold at 56s. per head. High rates were asked for good lambs. There was a rather large show of horses, and some from the neighbouring breeders were very promising, and the best obtained high prices. The inferior ones were a drug. The show of pigs was large, and of first-rate quality; but few sales were effected even at reduced prices.

BRENTWOOD HORSE AND CATTLE FAIR was the largest that has been held for many years. The sale was brisk, many thousands being sold on the first day, and at very improved prices, from the abundance of grass—probably from 10 to 20 per cent. higher than last year.

BRIDLINGTON FAIR.—We had a large show of beasts, the rates for which ruled high, consequently many were unsold. The horse fair had an average number of useful animals, but the majority were of an inferior description; little business appeared to be transacted.

CARLISLE HEMPTON FAIR.—A large muster of the woolly tribe, and the attendance of buyers was also pretty numerous. The demand was somewhat sluggish in the morning, probably owing to the stiff prices asked; but towards noon a better feeling was manifested, any many lots changed hands, at recent enhanced rates. There was a considerable number of cattle shown, and a good attendance of dealers. Ayrshire and Galloway beasts were mostly sought after at the late advanced rates.

CHICHESTER FAIR.—There was a good show of prime thirty-months old and young cart-horses, and they realized from £30 to £45. Messrs. Robert Sadler and Palmer brought 26 famous colts and horses, and they sold many from £35 to 40 guineas. Messrs. Port exhibited 14, and they met with a good sale. Messrs. Hore and George Light had some good stock.

CHRISTCHURCH FAIR.—The attendance was not so numerous as on former years. The sale of cattle and horses was exceedingly flat, and the sellers of swine were obliged to submit to much lower prices than of late.

COWLINGE FAIR was fully attended. The business in every description of stock was at an average of past years. There was a good show of horses and beasts of all sorts, and superior animals sold at high prices; but with those of superior quality little business was transacted, sellers asking high prices, and buyers being exceedingly cautious. Not a very abundant show of sheep, but the majority were of prime condition, and sold well and readily. Mr. Gent had some excellent lots, which were eagerly inquired after, and quickly disposed of.

DALKEITH FAIR.—The show was about one-third more than last year, and the largest market ever seen here. The stock was composed of two and three-year-old shorthorns and a considerable number of stirks of the same breed; also lots of Galloways, and two lots of very superior four-year-old West Highlanders. There was also a large number of Irish cattle, and a few lots of Yorkshire calves. The stock was early placed, and there was a ready demand for good beasts of all ages, which brought prices equally good as those obtained at Kelso, Jedburgh, Falkirk, or Linton. Stirks in condition met the next ready sale to the two-year-olds of the same quality. Good Galloways brought equally good prices as at Falkirk, where large numbers were shown. The Irish cattle, in anything like condition, of all ages, brought fully as high prices as at recent markets that they have attended. The Yorkshire calves also met a very fair sale, and in one or two sales suffered no reduction from the Border markets, or at Falkirk; but the inferior kinds would be from 5 to 7½ per cent. below either of the above. Upon the heavy cattle there was a reduction, for reasons given, from 5s. to 7s. 6d., and in some cases 10s., below all recent markets. News having arrived on the ground about 12 o'clock of an increase in the discount by the Bank of England, and the markets in the South having experienced a reduction, were the principal means of leaving about one-fourth of the stock unsold. The market continued, after the early sales, to be stiff throughout. This market was thickly studded with good draught horses, which met a very ordinary demand at prices rather below those of recent markets. The stuff was bought in dear, which compelled dealers to hold out; but withal a great many sales were effected amongst various parties. Upon the whole, horses were easier bought. There were few good harness and saddle horses; but what were really good met a ready sale, but not higher than recently.

DEVIZES FAIR.—The supply of stock, generally, was under an average. Sheep were not above two-thirds of the usual number; the best sold pretty freely at fully Weyhill prices, but inferior ones were slow of sale at those rates; the best ewes realized 46s. each; lambs, from 25s. to 37s. Cattle also met a slow sale, but at high prices. There were some very good cart-horses and colts, which brought high prices.

EARLSTOUN FAIR.—The number of cattle was about 300 short of last year; but the demand for all kinds of stock, except two-year-olds (which met with a dull sale), was brisk, and fully realized the prices of recent markets. Three-year-olds brought from £14 to £17; two-year-olds, from £11 to £14; and stirks, from £9 to £11, a few superior at £13. The supply of cows was below an average, and demand dull. Shorthorns brought from £16 to £20; Ayrshires, at the calving, from £12 to £15. There were more horses in the market than we have witnessed for many years; but they met with a slow sale. Draught-horses brought from £25 to £55; harness do., from £10 to £25; saddle do., from £15 to £25; and ponies, from £10 to £15. There were also a number of draught colts exposed for sale, belonging to English dealers, which met with a good demand at prices ranging from £30 to £40.

GLOUCESTER FAIR.—In the cattle fair the supply was good, and trade was lively at the prevailing high prices.

HARBOROUGH FAIR.—Some very good cart-horses were exhibited. All the best were soon disposed of at rather lower prices than at Waltham fair. On Saturday, a great many horses were sold, which day may be called the close of the horse-fair, all the large dealers leaving that evening. The cattle and sheep-fair began on Monday, when there was a large show of beasts and sheep; the best lots were almost all sold at good prices, and before the close of the fair a clearance was effected of the great bulk exhibited.

MAIDSTONE FAIR.—There was a very large attendance. The supply of cattle, horses, sheep, and pigs was unusually large; some of the horses were remarkably fine animals, but, although many persons anxious to purchase were present, the prices demanded were so high that very little business was done. The stock and sheep were generally in a very good condition, and many good sales were effected. Altogether a tolerable amount of business, advantageous to the sellers, was done.

MICHELL FAIR.—The supply of sheep was the smallest that has been known for years. Early in the day all were sold, and at prices from 2s to 4s. per head higher than those sold at Summercourt a fortnight previously; in fact the supply was so unequal to the demand that prices may be said to have been even higher than stated above. About the usual number of bullocks was driven in by the jobbers, the demand for which was likewise good, and nearly all descriptions changed hands at high prices before the close of the fair.

MUIR OF ORD MARKET, Oct. 21.—A good one for sellers. There were many dealers on the ground, and lots were disposed of early at good prices. It was supposed that the quotations at Falkirk market had an influence on prices here favourable to sellers. We heard of a few small lots of about 20 head and less of Cheviot wedders bringing 30s.; but as the wedders were principally shots, the prices did not reach this generally. The greater part of the stock consisted of ewes. The number of sheep shown on the stance was 6,659, which was considered a large number at an October market, and exceeded that of last year. Mr. Ross, Kinnahaird, sold a lot of wedders at 24s. 6d., a small lot of Dinmonts from Strathbran at 24s. 6d., and a lot of ewes at 14s. 6d. Mr. Mason, Gorthlick, sold a lot of wedders at 25s., and ewes at 15s. A large lot of ewes was purchased by Mr. Cruickshank, Ardmore, at 21s., among which was a considerable number of young ewes. The Knock, Skye, ewes were disposed of at 21s. Robert Fraser, Esq., Brackla, sold a lot of ewes at 21s. 6d. Oct. 22—There was an unusually large show of stock, a considerable proportion of which consisted of cross cattle. There was a scarcity of first-rate beasts, however, and for what was exhibited large prices were asked. On the better quality of Highland cattle the actual rise on last market's prices was said to be about 10s. a-head; the inferior sorts were sold at about the same prices as last market. Among the sales were the following: Mr. Mackessack sold a lot of very good two-year-old crosses to Mr. Grant, Dunean, at 16*l.* 18s.; Mr. Masson, Gorthlick, sold his two-year-old stots at 15*l.*, and heifers at 12*l.*; Mr. Munro, of Caithness, sold a lot of two-year-old queys at 16*l.* 17s. 6d.; Mr. Fraser, Brackla, bought a lot of 40 two-year-old crosses at 13*l.* 15s.; Mr. Moffat, Rosehaugh, bought from Mr. Macrae, Kincardine, cross stirks at 9*l.* 5s., and a second lot at 7*l.*; Mr. Murdo Macdonald, Gairloch, a lot of Highland stots at 7*l.* 7s. A large lot of horses was shown, good animals bringing high prices.

NEWARK FORTNIGHTLY MARKET.—The supply of beasts and sheep was good. Beef, 5d. to 7¼d. per lb.; sheep, 6d. to 8d.; lamb, 7d. to 8d.; calves, 6d. to 7¼d. per lb. There were 77 beasts, 699 sheep and lambs, and 140 calves in market,

NORWICH ST. FAITH'S FAIR.—This once-important fair commenced on Monday last. There was a great falling off as to the number of Scots, being only about 700. Their general condition and quality were prime, some lots nearly fit for the butcher. Of short-horns and Irish it was the worst show known for years; there were only two or three lots worth exhibiting, and the numbers not half those usually shown. Up to twelve o'clock scarcely a sale was effected, in consequence of the high prices asked and the great complaints of the turnip crops in many districts. Before the close of the day a tolerable amount of business was transacted. For Scots 5s. to 5s. 6d., prime 6s.; short-horns 4s. 6d. to 5s., very prime 5s. 6d.; Irish 3s. 6d. to 4s. 6d. per stone of 14lbs. when fat. At these prices nearly half the beasts remained unsold. We heard the highest price for the best Scots was £22 10s. per head, one small lot of short-horns made £23 per head. In consequence of the great quantity of keep in the North Lincolnshire, Devonshire, and other districts, cattle have ranged so high as to leave little or no profit to owners and dealers, and the Norwich cattle market still increasing causes a great falling off at all fairs in this county. In the horse fair there was scarcely a good animal to be seen; first-rate animals made high prices.

PENNYMUIR FAIR.—The supply of ewes and wethers fell considerably short of last year. Buyers being numerous, the whole stock was sold at high prices before 10 o'clock in the day. Cheviot ewes may be quoted from 25s. to 28s. 6d.; Cheviot wethers from 28s. to 36s. 6d.

ROTHERFIELD FAIR was well attended by both buyers and sellers. A good number of stock were offered, principally Sussex, and the rest Welsh. The trade was pretty brisk.

STRATFORD-ON-AVON FAIR.—There was a good attendance of buyers, but the supply of stock was small, scarcely 100 in the fair; and of sheep not more than 1,000. Trade very dull, on account of the high prices. Buyers, however, were obliged to comply, in many cases, to accommodate themselves. Beef made from 6½d. to 7d. per lb., and all bought up; also cows with their calves, and barrens and stores, brought high prices. Sheep and lambs, there was some of first-rate quality, and very few went back unsold. We may quote mutton from 6½d. to 7½d. per lb.; long-woolled, particularly the Southdown half-bred, 7½d. to 8½d. per lb.

WINCHESTER SHEEP AND LAMB FAIR, FRIDAY LAST.—The sheep in general appeared to advantage. The numbers penned were about 4,000 less than last year, which was some thousands in excess, so that the present may be considered about an average supply. Business commenced by sellers asking very long prices, which rendered the trade dull, buyers endeavouring to invest at a little less money than they have been paying of late; but, ultimately, slow sales were effected, at about the prices of the late Weyhill Fair. There was a far less number of prime pens than is usually seen at this fair, but still there were some, both of ewes and lambs, of the usual high character. Ewes, from 35s. to 45s.; extra, 48s.; lambs, 27s. to 40s.; extra, 42s. to 45s.; wethers, 38s. to 54s. These prices have not been equalled, on the average, since the year 1818, now 39 years ago, and it is quite clear the public must make up their minds to dear mutton, or buyers of lean sheep to a great loss next spring. There was an unusual large number of working oxen on offer, but which did not appear to meet with much demand. Some strings of good horses realized very high prices—colts coming three years old, £37 to £40 each. The horse fair held this day was very numerously supplied with good horses, which sold generally at high prices; five to seven years old from £38 to £50; extra, for London work, £60; good nags from £30 to £50. An unusually large number of oxen of the Devon breed, of good quality, sold at £10 to £12 for two-year olds; £15 to £17 for three-year-olds. A very large supply of pigs, for which the trade was very dull, at a great reduction in price: Large hogs from £3 to £3 15s.; half-fats, £5 each; store pigs from 15s. to 35s.; porkers, 40s. to 50s. each.

WOOLER FAIR.—There was a larger show of stock than usual, especially of cattle, there being a greater number than was ever shown in this fair before. Draught ewes were a slow sale, but fully supported the prices of previous markets; but dinmonts realized from 44s. to 48s. a-head, and half-breds from 36s. to 41s., which is equal to a rise of 5s. a-head above last year's prices. Of cattle there was a good show, and mostly in fresh condition for laying on to turnips. Mr. Ruddick, who was the largest shewer, had 400 cattle; but most of them being bespoke by his customers, they were disposed of the night previous to the fair. Cattle for feeding were bringing from £12 to £21, and young cattle for wintering from £8 to £12, which, compared to last year's, speaks an advance of £2 a-head on large, and £1 a-head on small cattle, or equal to a rise of 12 per cent.

YARM FAIR was exceedingly well attended, and the farmers had a good opportunity of disposing of their stock at good and remunerating prices. The horse fair has only recently been established, and was this year better supplied with horses than at any previous year. Superior roadsters were in great demand; and they, and Cleveland brood mares, met with a ready sale, and were sold at good prices, whilst a great many cart horses changed hands. Ponies, too, met with a quick sale. On the 19th, there was an exceedingly good and large show of beasts of every description, which met with a brisk market. Shorthorns, fat steers, calving cows, and grazing cattle were in great request, and were soon bought up. Beef sold at from 7s. 6d. to 8s. per stone. On the 20th, the supply of sheep was not so good as might be expected; however rams, of superior quality, were readily disposed of at advantageous prices. Fat sheep and shearlings were in great demand, and realized from 7½d. to 8d. per lb.

IRISH FAIRS.—TUAM GREAT OCTOBER FAIR, (Tuesday last.)—As far as regards supply, quality, and remunerative prices, it has never before been surpassed. The number amounted to nearly 30,000, being about 10,000 over last year, which reached the largest supply theretofore known. What is more remarkable still, the demand on the present occasion fully came up to the supply, and the prices even exceeded the very sanguine expectations of sellers, being from 3s. to 4s. over the late rates at Ballinasloe, and from 6s. to 8s. over last year's prices here, taking an average of every description of stock. Before eleven o'clock the purchases reached nearly 20,000. Very few, if any, of the principal lots remained unsold. Subjoined are a few of the principal quotations:—Mr. Geoffry Martyn sold 150 two-year-old wedders to Mr. James Smith at 56s. 6d. each. Mr. Charles Kelly, Ardskea, 100 do. bought by Mr. Persse at 56s. 6d. each; same for second lot of 100 do., at 50s.; and for third lot of 140, at 47s. each. Mr. Michael Roache, for 100 wedder hoggets, 53s. 6d., bought by Mr. Persse, and same for second lot of 100 do., at 50s., bought by Mr. Smith, of Dublin. Lord Plunkett, for 40 wedder hoggets, 55s. Mr. Jas. Browne. for 60 lambs, bought of Mr. J. Jackson, 38s. 6d. each. Mr. Kirwan, of Castlehacket, for 100 two year old wedders, 44s. 6d. Mr. Jeremiah Petty, for 300 two-year-old wedders, bought by Mr. Colgan, county Westmeath, 46s. each. Mr. C. O'Kelly, for large lot of lambs, 34s. 6d. Mr. Charles Kelly, for a lot of aged ewes, 34s. Mr. Blake, of Ballinafad, for a large lot of wedders, 47s. 6d. Mr. P. N. Mangan, for 200 wedder hoggets, bought by Mr. O'Rourke, at 49s. 6d. Mr. T. Culinan, 200 two-year-old wedders, at 48s. Mr. Bodkin, Kilclooney, for 100 two year old wedders, sold to Mr. Rutherford, Turin Castle, at 51s. 6d. Lord Dunsandle bought 60 lambs from Mr. Mitchell, at 32s. 6d. each. Mr. D. Leonard, for a lot of lambs, 39s.; wedder hoggets, 46s. Mr. Roche, for 100 aged ewes, 46s., from Mr. J. Blake. Mr. J. Kelly, of Kinclare, for 100 wedder hoggets, sold to Mr. C. Blake, 49s. 6d. Mr. Denis Bodkin, for lambs, 34s. Lord Plunkett sold 50 wedder hoggets to Mr. C. Blake, at 55s. each. Mr. Robert, Bodkin sold 60 wedder hoggets, at 48s. 6d. to Major Burke. Dr. Davie, for 100 wedder hoggets, sold to Mr. Egan at 45s. each. Messrs. Mitchel, Raftery, and Maher also purchased extensively in varieties of lots. Maiden ewes brought from 37s. 6d. to 45s. 6d., and were in good demand. Some excellent tups were disposed of by Mr. Edward Browne, Mr. Perry, &c., at figures ranging from £6 to £8 10s. and £9 each. Some small lots of lambs brought as high as 40s. each. The news of the decline in the price of wool seemed to cause no material diminution whatsoever in the demand; and before three o'clock few lots, if any at all, worthy of notice remained unsold.—The cattle fair came off on Wednesday, and the supply far exceeded previous years. Prices ranged very high. In stock of advanced condition they were fully equal to Ballinasloe, and far beyond the figures at last year's fair of Tuam. Two years old heifers averaged from £8 to £10 15s., and three years old ditto from £12 to £14 10s. Most of the lots were disposed of before twelve o'clock. Bullocks ranged from £11 15s. to £14 10s. each. Some fat bullocks fetched £21 each. Milch cows brought from £8 10s. to £15 and £17 5s. each. Calves from £3 to £5 and £6 5s. each. Very few lots remained unsold. The demand was very good, and the supply was likewise very large.

GLASGOW.—There is a large extra stock lying over in the weigh-house, where six tons passed the scales, and six carts were shown in the market. Sales dull, and prices a shade less than last market day. New 49s. to 52s. 6d., old 66s. to 68s., and prime early-made cheese of this year 56s. per cwt., skim cheese 24s. to 26s.

GLOUCESTER.—The supply amounted to about 140 tons, but the trade was dull, and from 15 to 20 tons left unsold. Prices were: Loaves and thick, 65s. to 70s; best singles, 48s. to 60s.; seconds, 42s. to 52s.; skim, 28s. to 30s. per cwt.

HEREFORD.—There was a large supply, without any depreciation from former years. Prime cheese fetched from 6d. to 8d. per lb.

MARKET HARBOROUGH.—The pitch of cheese was larger than on any previous year, the greater part having been brought in by dealers. Prices ranged from 60s. to 80s. A whole clearance was not effected, and trade was dull.

YARM CHEESE FAIR was good, and there was an unusual demand, and hence speedy sales were effected at high prices. New milk sold at from 55s. to 68s., average 60s., and old milk at about 29s. per cwt.

COUNTRY POTATO MARKETS.—YORK, Oct. 17: Potatoes sell at 1s. per peck, and 2s. 9d. to 3s. 6d. per bushel. LEEDS, Oct. 20: A moderate show of potatoes, at 13d. to 14d. per 21lbs. wholesale, and 14d. to 15d. retail. MALTON, Oct. 17: Potatoes 1s. to 1s. 2d. per peck. SELBY, Oct. 19: Potatoes 10d. per st. RICHMOND, Oct. 17: Potatoes 3s. 4d. per bushel. DONCASTER, Oct. 17: Potatoes 12s. per load. SHEFFIELD, Oct. 20: Potatoes sell at 12s. to 15s. per load of 18 stone. MANCHESTER, Oct. 20: Potatoes sell at from 10s. to 14s. per 252lb.

KEEVIL PATENT CHEESE-MAKING APPARATUS.—(To the Editor of the Mark Lane Express.)—Sir,—This patent cheese apparatus has been introduced into this neighbourhood, and by which about 30lb. more cheese can be obtained per week from the milk of 30 cows than by the old method. The quantity so gained is not the only advantage, but the quality is so much superior, by reason of all the butter being left in the cheese, that 2s. 6d. per cwt. more is readily obtained, and is well worth the money; and here there is a clear gain of 1*l.* 8s. 6d. per week upon the 30 cows—a fact which has been abundantly proved. But against this, as against many other inventions for agricultural purposes, there is a strong prejudice, and two arguments are strongly urged: first, that the price is exorbitant, viz., from 16*l* to 34*l.*; and the second, that in case of its adoption the landlord may make it a pretext to come down upon his tenant for an increase of rent; both upon reflection will be seen to be equally futile, and I have been informed by a highly respectable farmer that the present year his clear gain by the use of this apparatus upon 30 cows was 40*l.* more than he would have gained by the old method; and there is found an immense saving of time and labour, and avoidance of a deal of slopping work; and I quite agree with Lord Campbell in giving judgment upon a case in which Mr. Keevil obtained a verdict for an infringement of his patent. His lordship says: "I may express my admiration of the invention, which appears to me to be a beautiful one, and that I consider will be exceedingly useful." Perhaps you will deem these few plain facts worthy of a place in the *Mark Lane Express.*—Yours, &c., M. Saul, 10, Upper King-street, Lancaster.—Oct. 21.

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

During the past month considerable progress has been made in the autumnal tillage, and a fair breadth of wheat has already been got in favourably, though there were interruptions in the earlier part of it, as well as a serious and destructive fall of rain on the 22nd for the Low Countries, both to cattle as well as tenements and the soil. The extraordinary state of affairs in America having had serious influence on the markets generally, the corn trade has felt the pressure, and the calculations which might fairly be made for ordinary times have therefore been set aside, and the future, always uncertain, seems more than usually dubious. There is, however, so much of unreasonable panic in times of monetary derangement, occasioning the suspension of houses of real solidity, that we cannot but hope for a gradual clearance of the clouds in the west, especially as the affairs of India have apparently passed their worst, and the Funds already show symptoms of returning confidence. Though the inquiry for seed has served to give value to the better kinds of wheat, the counter-influence has prevailed, and a decline of about 6s. or 7s. per qr. has ensued in the London market, with great difficulty to place at the reduction. Nearly half the fall was mainly to be attributed to a report that the French government, contrary to a recent decree, was about to permit the exportation of flour; but it appears this is not the case at present, the request made to government being only that an export of flour may be permitted, equivalent to the import of foreign wheat. The present depression may, therefore, give place to some reaction. American shipments hitherto have been moderate the whole month of September, exports at New York comprising but 65,000 qrs. wheat, and 71,562 brls. flour, and the derangement of money matters prevents free expeditions from the interior; this, together with the certainty of winter's rapid approach, which must block the canals, will limit supplies to the railways, and tend to delay any heavy exports till spring. Should this be the case, time will be given to both countries to feel the serious deficiency of the potato crop, and to recover from financial difficulties, when those who have been able to hold over their produce may realize better prices. Excepting France and the Danube, there is at present no country in Europe whose markets are prepared at present to meet English quotations; but should increased pressure prevail in Northern Europe, where there is a good crop, the best means will doubtless be used to send as much as possible, before the close of the Baltic by frost. The country markets have not been equally sensitive with those of London, and the state of the general averages for the past month shows but a moderate reduction, commencing at 57s. 6d. and closing at 55s. 10d.; but so great was the depression in London on the 26th, that this latter price was very little beyond the biddings made for the best white samples.

There has been lately a falling off in the deliveries, indicating some resistance to the decline in prices, the last three weeks showing 32,298 qrs. less sold than in 1856 at the same period. Prices in France, with everything unfavourable to growers, seem to have passed their lowest, the quotations at Paris being 29 francs to 31 francs per sack for wheat, equalling 44s. 3d. to 46s. 6d. per qr., and the top price of flour there was about 35s. per sack English. The best wheat at Galatz was 35s. per qr., but the addition of 15s. per qr. freight and expenses brings the price to 50s. At Odessa prices had materially risen in consequence of short arrivals through unfavourable weather. Ghirka wheat there was worth 49s. 6d. per qr., and the best Polish 50s. The inferior wheat of Egypt was quoted 34s. per qr. free on board at Alexandria. Prices though greatly reduced in Spain, were still high for that country, the quotations at Valladolid being 57s. 3d., and fine home-made flour at Santander has lately sold at about 56s. per sack English. At Antwerp red wheat was worth 50s.; white 54s.; Hambro' quotes 53s., and so does Rostock for red; Dantzic as yet has received but scanty supplies of the new crop, prices being about 54s. to 56s. per qr. Stettin was dull by last accounts, for prime red at 49s. 3d. At Petersburg fine wheat was held at about 52s. per qr. Algiers not being well supplied, and having a demand from Marseilles for the fulfilment of former contracts, quoted 49s. 6d. for hard wheat. The unsettled state of commercial affairs in America has made quotations unreliable, but the last advices from New York noted some improvement in good wheat, the best white Southern being quoted 1 dol. 20 c. to 1 dol. 42 c. per bush. = 41s. 3d. to 49s. per qr. At Toronto rates varied from 4s. to 5s. 6d. per bush., farmers being very reluctant to accept the rates.

The first Monday commenced on moderate supplies both English and foreign, and the close of the former week being firm, some advance was demanded, but the show being good from Kent and Essex, and country buyers absent, there was but a steady trade, at former prices. The following Wednesday being "the day of humiliation," th whole week in the country proved dull, and several places quoted lower prices, to the extent of 1s. to 2s. per qr. Liverpool found but little trade either on Tuesday or Friday, and the rates for fine wheat were scarcely varied, but second qualities were rather cheaper. London closed on Friday with great dulness, and a tendency to some decline.

The second Monday's supplies were by no means heavy; but, in the total absence of all speculation, and millers being reluctant buyers, prices gave way fully 2s. per qr.: foreign new being similarly reduced, with some concession made on the best old qualities. Some of the country markets found no necessity for this concession—as Manchester, Birmingham, &c.; but generally there was a decline, Spalding, Boston, Hull, Louth, Bristol, and Gloucester being fully 1s. to 2s. down: and this was the general report in later markets. Tuesday's market, at Liverpool, was 4d. per 70lb. cheaper; but on Friday there was more doing in American wheat, at the decline. London finished still pointing to lower prices.

The third Monday had liberal supplies, especially from abroad; but the samples for the morning from Kent and Essex were not numerous. In the absence of country buyers, trade again fell back, with prices reduced 2s. further; and little progress was made with the bulk from Essex, white wheat being most neglected; and foreign, as usual, being equally dull, and cheaper. The country, influenced by town advices, was generally lower, but without the same decision, Boston, Lynn, Manchester, Newcastle, Gloucester, and most other places, making the decline 1s. to 2s.; but Newark, Wakefield, and Bristol quite equalled the reduction in London, which, as the week closed, was increased.

The fourth and last Monday was well supplied. This, together with the state of the money market both here and in America, added to the current idea that wheat and flour were about to be allowed to be exported from France, produced quite a paralysis in trade; and the little that was done was at a fall of fully 3s. per qr. Very little was passing in foreign, needy buyers only supplying their wants, at a like reduction.

The arrivals of English wheat for the month have scarcely varied from the last, being 30,531 qrs.; but the foreign imports have increased to half as much again, being 66,903 qrs.; thus giving an average of 24,359 qrs. weekly, after a favourable harvest. The bulk of the foreign supply has chiefly come from Russian ports. The month's exports were 4,343 qrs. wheat and 51 sacks flour.

Town-made flour, notwithstanding the decline in wheat, has been steadily kept up at 50s. per sack from the month's commencement to its close; but Norfolks, after being quoted 1s. higher on the first Monday, receded 1s. per sack on the two following Mondays, and finished by a further fall of 2s. per sack on the last day, leaving off at 37s. There having been only one important arrival of American flour, and that occurring in the third week, the samples were not pressed, and prices have little changed, the old stock here being nearly exhausted. Country arrivals of late have been increasing, the total supply for the month being 67,667 sacks, and the foreign received being 3,995 brls., with 1,168 sacks. This makes the supply about 5,000 sacks 3,500 brls. over that of September.

The receipts of English barley for the month have increased; but foreign supplies have been much reduced, the old stocks abroad having nearly run out. As to malting qualities, so few really fine now appear in the London market—being probably bought up by maltsters and brewers—that their scarcity has kept the rates steady, and 1s. per qr. is the utmost reduction on such; but the sorts for distillation being plentiful, with a diminished inquiry, in consequence of the permission to use grain for this purpose in France, these sorts have almost become of nominal value, after a fall in the course of the month of 3s. to 4s. per qr., which has occurred during the last fortnight. Grinding sorts also are fully 2s. per qr. lower. We do not, however, expect any serious or permanent abatement on the best kinds, as they must be in small campass, with a somewhat deficient crop; while the secondary and inferior sorts will be partly kept up by the high prices paid for beans and peas. The supply this month of English qualities was 13,628 qrs., and of foreign 36,678 qrs.

The malt trade has been in sympathy with grain generally; and the last two Mondays noted a decline in the best qualities of 1s. per qr. each day, the lower sorts having fallen 3s. to 4s. per qr.

The prices of oats through the month have scarcely varied 1s. per qr.; a reduction of that amount having ensued in the value in consequence of the continued large arrivals from Russia, whence by far the greater portion has come, though the rate of the foreign supply has not equalled that of last month. The weekly average, however, of 37,729 qrs. has been kept up by a moderate supply of new corn from Ireland. These latter, from their scarcity, commenced at high rates relatively; but as soon as supplies of some importance appeared they found their level, the reduced demand for distillation telling upon the finer descriptions. Some concession generally was made on the third Monday, and fully 1s. per qr. less was quoted on the last day, when the heaviest supply got up. Should the Baltic close early, and cut off foreign shipments, it seems more probable that this grain will advance than decline, as the growth is less in Ireland than last year. The supplies into London for the month have been as follows: 5,584 qrs. English, 867 qrs. Scotch, 15,748 qrs. Irish, and 128,715 qrs. foreign.

In the absence of arrivals from Egypt, the foreign supply of beans has been lessened; but those of home-growth, being aided by the new crop, have increased. From their first appearance there may have been a decline of 1s. to 2s. per qr. on new sorts, but hardly any quotable abatement can be noted in old or foreign qualities. Future rates must depend on Egyptian supplies; but as these are relatively moderate in price, when compared with other grain, there must be a large consumption, and it does not seem likely they will be much cheaper. We have received in the month 3,518 qrs. of home-growth and 1,795 qrs. from the continent.

The supplies of peas have rather increased, but are still moderate. The market throughout the month has been remarkably steady, and the rates for hog-feeding kinds have kept high, though boilers have lately risen nearer to their former relative value, fine white being worth 52s. and maples about 46s. per qr. The English and foreign supplies have nearly been equal, the former being 2,092 qrs. and the latter 2,084 qrs.

The supply of linseed this month, being 32,520 qrs., has exceeded the last by 2,300 qrs.; but the exports being 6,364 qrs. against 1,166 qrs. in September, leave the quantity for home-use 2,907 qrs. less; still the state of the money market has lowered prices by about 2s. per qr. in the course of the last fortnight. The demand, however, for cake has been so continuous, that crushers have not found it necessary to make any abatement in prices. The high price of meat has evidently encouraged graziers to keep their stock well up, as there is abundance of grass and the root crops are large.

In the seed trade there has been little stirring. canary having fallen to £5 per qr., with a slow sale. The few forward purchases in foreign cloverseed have not been followed up; prices in France have therefore been declining, and speculation on this side has ceased, the high rates of interest obtainable on capital making early purchases undesirable, especially as it is thought some quantity has been secured here, from the fineness of the weather in September, and that the deficiencies once reported in France were over-rated or doubtful. White cloverseed and trefoil have been also exceedingly dull. White mustardseed has kept its value; brown remaining difficult to place. Winter tares are not yet cleared from the market, and sell at easy rates. Hempseed, rapeseed, and other descriptions used in confectionery, remain much the same in value as last reported, with but a limited consumption.

CURRENCY PER IMPERIAL MEASURE.

Shillings per Quarter

Wheat, Essex and Kent, white				43 to	58	new	47 to	58
Ditto, red				44	53		46	53
Norfolk, Linc. and Yorks., red				44	54		46	53
Barley, malting	37 to	40				Chevalier, new	41	45
Distilling	34	37				Grinding	25	30
Malt, Essex, Norfolk, and Suffolk			59	65	73	new	69	71
Kingston, Ware, and town made			61	66	73	,,	70	73
Brown				55	57		—	—
Rye				—	—		30	35
Oats, English, feed	20	25				Potato	26	32
Scotch, feed	20	25				Potato	27	33
Irish, feed, white				20	22	fine	23	30
Ditto, black				20	22	,,	—	24
Beans, Mazagan	34	39				Ticks	36	38
Harrow	36	40				Pigeon	43	47
Peas, white boilers	40	50	Maple	42	45	Grey	40	42
Flour, per sack of 280lbs., Town, Households					46s.	fine	47	50
Country	38	40				Households	41	42
Norfolk and Suffolk, ex-ship							36	37

FOREIGN GRAIN.

Shillings per Quarter

Wheat, Dantzic, mixed	56	59	high do.	—	—	extra	—	61
Konigsberg	50	56	,,	—	—		—	—
Rostock	46	58	fine	—	—		—	—
American, white	54	58	red	50	53		—	—
Pomera., Meckbg., & Uckermrk, red				48	52		—	—
Silesian, red	45	52				white	54	58
Danish and Holstein							45	50
Russian, hard	45	54				French	(none)	
St. Petersburg and Riga							46	54
Rhine and Belgium							—	54
Barley, grinding	23	29				Distilling	35	39
Oats, Dutch, brew, and Polands				20	28	Feed	19	25
Danish and Swedish, feed				20	25	Stralsund	23	26
Russian							20	24
Beans, Friesland and Holstein							37	39
Konigsberg				32	37	Egyptian	37	38
Peas, feeding				40	42	fine boilers	45	50
Indian Corn, white				36	38	yellow	36	38
Flour, per sack			French	—	—	Spanish	—	—
American, per barrel, sour				22	25	sweet	30	32

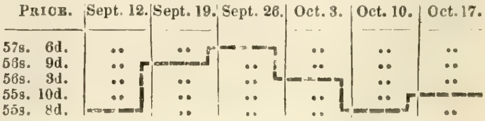
IMPERIAL AVERAGES.

For the last Six Weeks:	Wheat.		Barley.		Oats.		Rye.		Beans.		Peas.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
Sept. 12, 1857	55	8	42	5	26	1	38	9	46	0	41	7
Sept. 19, 1857	56	9	42	3	26	5	37	0	45	4	42	11
Sept. 26, 1857	57	6	42	11	25	6	37	7	45	7	44	1
Oct. 3, 1857	56	3	43	4	27	0	35	6	45	6	43	4
Oct. 10, 1857	55	8	43	0	25	6	35	7	45	7	43	7
Oct. 17, 1857	55	10	43	0	25	6	35	4	45	6	44	5
Aggregate average	56	4	42	10	26	0	36	8	45	7	43	4
Sametimelastyear	65	7	44	4	26	4	42	5	45	6	42	11

COMPARATIVE AVERAGES—1857-56.

From last Friday's *Gaz.*		s.	d.	From *Gazette* of 1856.		s.	d.
Wheat	122,132 qrs.,	55	10	Wheat	137,286 qrs.,	65	9
Barley	65,252 ..	43	0	Barley	63.852 ..	44	0
Oats	10,786 ..	25	6	Oats	13,563 ..	26	8
Rye	932 ..	35	4	Rye	519 ..	40	1
Beans	5,251 ..	45	6	Beans	5,830 ..	46	1
Peas	2,207 ..	44	5	Peas	1,893 ..	44	0

FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT.



PRICES OF SEEDS.

BRITISH SEEDS.

Tares, new, per bushel	5s. 0d. to 5s. 9d.
Mustardseed, per bushel..new 17s. to 21s., brown	to 21s.
Coriander, per cwt	20s. to 24s.
Canary, per qr.	80s. to 100s.
Linseed, per qr., sowing —s. to —s...crushing	69s. to 70s.
Linseed Cakes, per ton	£9 10s. to £10 0s.
Rapeseed, per qr.	70s. to 72s
Rape Cake, per ton	£5 0s. to £5 10s.

FOREIGN SEEDS. &c.

Tares, per bushel	0s. 0d. to 0s. 0d.
Hempseed, small, per qr. .... —s. to 44s...Do. Dutch	46s.
Coriander, per cwt	15s. to 20s.
Carraway ,,	41s. to 46s.
Linseed, per qr., Baltic ..67s. to 70s...Bombay	69s. to 71s.
Linseed Cake, per ton	£9 10s. to £10 0s.
Rapeseed, Dutch	76s. to 80s.
Rape Cake, per ton	£5 0s. to £5 10s.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

LONDON, Monday, Oct. 26.—Since Monday last, the arrivals of Potatoes coastwise and by railway have been only moderate. The imports from abroad, however, have been very extensive, viz., 97 tons from Tonningen, 1,200 tons from Antwerp, 212 tons from Hambro', 213 tons from Rotterdam, 77 tons from Ghent, 210 tons from Bruges, 6 bags from Bremen, 40 tons from Ostend, 91 tons from Groningen, 30 tons from Jersey, and 110 tons from other quarters. The demand is in a sluggish state, as follows:—

York Regents	140s. to 160s. per ton.
Kent and Essex do.	120s. to 140s. „
Middlings	60s. to 70s. „
Lincolns	110s. to 120s. „
Blues	120s. to —s. „

COVENT GARDEN MARKET.

LONDON, Saturday, Oct. 24.—The market is now well stocked with an excellent assortment of Fruit and Vegetables. Pears consist chiefly of Marie Louise, Glou Morceau, and Duchesse d'Angouleme. Large importations of foreign produce also continue to arrive. There is still a good supply of Filberts, but the demand has fallen off, and there is scarcely any sale for them; they fetch from 25s. to 30s. per 100 lbs. The supply of Kent Cobs continues good; prices range about the same as last week. Barcelona Nuts fetch 22s. per bushel; and Brazils, 18s. do. Oranges from Madeira and Oporto have just made their appearance. Among Vegetables are French Beans and Cauliflowers, the latter realizing from 2s. 6d. to 3s. 6d. per dozen. Cucumbers are plentiful. Spanish Onions may now be had at from 1s. to 2s. 6d. per dozen. Potatoes are greatly diseased; they have advanced in price considerably, but it is thought they will not long maintain present quotations. Cut flowers consist of Orchids, Gardenias, Heliotropes, Geraniums, Violets, Mignonette, Heaths, and Roses.

FRUIT.

	s. d.	s. d.		s. d.	s. d.
Pineapples, per lb.	4 0 to	6 0	Pears, per doz.	1 0 to	4 0
Grapes, per lb.	2 0	4 0	Apples, per half sieve	1 0	2 6
Oranges, per 100	0 0	0 0	Plums, per half-sieve	0 0	0 0
Lemons, per dozen	1 0	2 0	Melons	1 0	4 0
Do., per 100	5 0	10 0	Nectarines, per doz.	0 0	0 0
Peaches, per doz	3 0	6 0	Filberts per 100lbs.	25 0	30 0

VEGETABLES.

	s. d.	s. d.		s. d.	s. d.
Cabbages, per dozen	0 0 to	0 0	Tomatoes, per half-sieve	3 0 to	4 0
Cauliflowers per doz	2 0	4 0	Artichokes, each	0 6	0 8
Broccoli, per bundle	0 6	1 0	Ditto, per half sieve	0 0	0 0
Greens, per doz. bunches	3 0	4 0	Shallots, per lb.	0 6	0 8
Brussel Sprouts, pr hf. s.	2 6	3 6	Garlic, per lb.	0 6	0 8
French Beans, per hf sv.	1 6	3 0	Lettuce, Cos., per score	1 6	2 0
Potatoes, per ton	80 0	140 0	Endive, per score	1 0	1 6
Do. per bush.	2 0	2 9	Radishes, turnp, per doz.	1 0	1 6
Do. per cwt.	4 0	6 0	Small Salad, per punnet	0 2	0 3
Carrots, new per bunch	0 4	0 6	Horseradish, per bundle.	1 6	4 0
Turnips, per bunch	0 2	0 4	Mushrooms, per pottle	1 6	2 6
Spinach, per sieve	1 0	2 6	Parsley, per bunch	0 2	0 4
Cucumbers, each	0 6	0 9	Basil, green, per bunch	0 6	0 4
Beet, per dozen	1 0	2 0	Marjoram, per bunch	0 2	0 4
Celery, per bundle	1 0	1 6	Savory, per bunch	0 2	0 8
Leeks, per bunch	0 2	0 3	Mint, green, per bunch	0 2	0 4

CHICORY.

LONDON, Saturday, Oct. 24.—Scarcely any business has been transacted in our market, this week, and the quotations are almost nominal. The supply of both English and foreign Chicory is tolerably extensive.

ENGLISH, per ton	£13 0 to	£13 10	HAMBURG	£0 0 to	£0 0
HARLINGEN	13 0	13 10	BELGIUM	13 0	13 10
FLANDERS	12 0	13 0	GUERNSEY	13 0	0 0

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.:	s.	s.
Friesland	116 to	120
Kiel	112	120
Dorset	116	126
Carlow	104	114
Waterford	104	116
Cork	110	118
Limerick	100	112
Sligo	104	112
Fresh, per dozen..13s.0d.to 15s.0d.		

CHEESE, per cwt.:	s.	s.
Cheshire	66	76
Cheddar	74	86
Double Gloucester	58	64
HAMS:		
York	98	104
Westmoreland	94	102
Irish	—	—
BACON: Wiltshire, dried	80	84
Irish, green	70	74

ENGLISH BUTTER MARKET.

LONDON, Monday, Oct. 26.—We note a very sluggish trade in Butter in every department, at drooping prices.

Dorset fine	per cwt. 124s. to 126s.
Ditto, middling	100s. to 102s.
Devon	114s. to 116s.
Fresh	per doz. lbs. 12s. to 15s.

BELFAST, (Friday last.)—Butter: Shipping price, 104s. to 115s. per cwt.; firkins and crocks, 11½d. to 12¼d. per lb.; Bacon, 60s. to 66s.; Hams, prime 84s. to 90s, second quality 70s. to 78s. per cwt.; prime mess Pork, 100s. per brl.; Pork, 50s. to 57s. 6d.; Beef, 120s. eo 130s. per tierce; Irish Lard, in bladders, 76s. to 80s.; kegs or firkins, 68s. to 7s. per cwt.

LONDONDERRY, (Thursday last.)—Butter: this week a fair supply of butts and firkins; demand very dull, which had the effect of reducing prices to quotations; but even at the decline noted for firkins, the market closed with a tendency to lower rates: firkins, first 1s. 0¼d. to 1s. 0½d., second 11½d. to 11¾d., third 10¾d. to 11d., fourth 10d. to 10½d., fifth 9d. to 9¼d. per lb.: butts, fine 1s. 0½d. to 1s. 1d., good 1s. to 1s. 0¼d., middling 11½d. to 11¾d. per lb.

HAY MARKETS.

Saturday, Oct. 24.—SMITHFIELD.—Supply good; and trade dull.

CUMBERLAND.—A moderate supply, and a sluggish demand.

WHITECHAPEL.—Both hay and straw moved off heavily, although the supplies were not extensive.

At per Load of 36 Trusses.

	Smithfield.		Cumberland.		Whitechapel.	
MEADOW HAY	50s. to	75s.	50s. to	80s.	48s. to	75s.
CLOVER DITTO	70s.	95s.	72s.	95s.	70s.	100s.
STRAW	25s.	30s.	24s.	30s.	25s.	30s.

OIL MARKET.

OILS.

Olive, Florence, half-chests	£0 18 0 to	£1 0 6
Lucca	6 17 0	7 0 0
Gallipoli (252 gals)	59 10 0	60 0 0
Spanish	57 0 0	59 0 0
Linseed (cwt.)	1 16 6	1 17 0
Rape, Pale	2 7 0	2 9 0
Brown	2 7 0	0 0 0
Cod (tun)	37 10 0	38 0 0
Seal, Pale	43 0 0	0 0 0
Do. Brown, Yel. &c	40 0 0	42 0 0
Sperm	88 0 0	89 0 0
Head Matter	96 0 0	0 0 0
Southern	43 0 0	45 0 0
Cocoa-nut (cwt.)	2 7 6	2 9 0
Palm	2 2 0	2 6 6

RESIN.

Yellow (per cwt.)	£0 5 6	0 6 0
Transparent	0 5 6	0 6 0

PITCH.

British (per cwt.)	£0 6 6	0 0 0
Archangel	0 0 0	0 0 0
Stockholm	0 10 0	0 0 0

TURPENTINE.

Spirits (per cwt.)	£2 0 0	2 0 0
In Puncheons	1 19 0	0 0 0
Rough	0 11 0	0 11 6

TAR.

American	£0 0 0	0 0 0
Archangel	0 0 0	0 16 0
Stockholm	0 14 6	0 0 0

WHALEBONE.

Greenland, full size (per ton).	£600 0	0 0
South Sea	0 0	0 0 0

TIMBER.

LONDON, Saturday, Oct. 24.—Great heaviness continues to prevail in our market generally, and to effect sales lower rates must be submitted to. The supply is very large.

Per load—	£ s.	£ s.
Quebec, red pine	3 10 to	4 10
Yel. Pine	3 10	4 0
Quebec Oak, White	6 0	6 5
,, Birch	4 0	4 15
,, Elm	4 10	5 10
Dantzic Oak	4 0	6 0
Memel Fir	3 10	4 5
Swedish	2 10	3 0
Masts, Qubc. Red Pine	6 0	6 10
Do. Yellow Pine	5 0	7 0
Lathwood, Dantzic fm	8 0	9 10
Do. Memel	10 0	11 0
Do. Quebec	5 0	5 5
Deals, per C. 12 ft. by 3 by 9 in.:		
Quebec Wh. Spruce	9 0	11 5
Do. Red Pine	11 10	17 5
St. John Wh. Spruce	11 11	15 0

	£ s.	£ s.
Deals, Yel. Pine, per reduced C.:		
Canada, 1st quality	15 10 to	16 10
Do. 2nd do.	11 0	11 10
Archangel Yellow	16 0	16 10
Memel	13 0	15 0
Gothenburg Yellow	13 0	14 0
Do. White	11 0	12 0
Gefle Yellow, 14 ft.	30 0	31 0
Christiania, per C. 12 ft. by 3 by 9 in.:		
Yellow	24 0	29 0
White	20 0	24 0
Deck Plank, Dantzic, per 40 ft. by 3 in.	1 0	1 10
Staves, per Standard M.:		
Quebec Pipe	80 0	0 0
Do. Puncheon	20 0	23 0
Baltic Crown Pipe	145 0	150 0

LEADENHALL LEATHER MARKET.

LONDON, SATURDAY, OCT. 24.—Although the supplies of Leather on sale have been only moderate, the trade generally has ruled heavy. Market hides continue dull, and prices have further receded 1s. to 2s. per hide.

CROP HIDES.

ENGLISH.

lbs.	lbs.	d.	d
28 to	35	18 to	20
36	40	18	20½
40	45	18	21½
46	50	19	22
50	55	19	22
55	60	19	22

BUTTS.

ENGLISH.

lbs.	lbs.	d.	d.
14	16	24	27
17	20	24	27
21	24	24	27
25	28	25	28
29	32	25	2-
33	36	25	28

FOREIGN.

lbs.	lbs.	d.	d.
14	16	22	25
17	20	22	25
21	24	23	26
25	28	24	26
29	32	25	27
33	36	25	27
36	45	—	—
45	50	—	—

OFFAL.

	d.	d.
English Shoulders	16	20
Do. Cheeks and Faces	10	12
Do. Bellies	10	12
Do. Middles	14	15
Foreign Shoulders	15	17
Do. Necks	11	13
Do. Bellies	9½	11½
Do. Middles do.	13	14
Dressing Hide Shoulders.	13	16
D. do. Bellies	10	11
Kip Shoulders	5	8
Do. Bellies	6	6½

DRESSING HIDES.

	lbs.	lbs.	d.	d.
Common	20 to	24	17½ to	18½
Do.	25	28	17½	18½
Do.	30	34	17½	18½
Do.	35	40	17½	18½
Saddlers	30	35	18½	20
Do.	36	50	19	21
Bulls			14	16
Shaved	14	16	21	22
Do.	17	19	20	22
Do.	20	23	19	21
Do.	24	28	18½	20
Scotch do.	16	21	20	22
Coach, per Hide			30s. to	36s.

HORSE BUTTS. SHAVED.

	d.	d.	d.	d.
English	16 to	17	18 to	19
Spanish	16	17	18	19

HORSE HIDES.

	lbs.	lbs.	d.	d.
English	13 to	18	15 to	17
Do. without butts	9	14	15	17
			s. d.	s. d
Spanish salted, without butts, per hide.	6	9	12 0	17 6
Do. do. do.	9	11	14 0	19 0
Do. do. do. inferior			9 0	12 0
Do. dry do.	6	8	10 6	15 0
Do. do. do.	9	11	12 0	17 0
Do. do. do. inferior			8 0	11 0

CALF SKINS.

Av. weight.		Unrounded.		Rounded.	
lbs.	lbs.	d.	d.	d.	d.
20 to	28	18 to	22	21 to	29
30	35	19	24	22	30
35	40	19	24	22	30
40	45	20	25	22	30
45	50	20	25	22	30
50	55	20	24	21	30
55	60	19	24	21	29
60	70	19	23	21	28
70	80	19	22	20	28
80	90	18	21	20	26
90	100	18	21	20	25
100	120	17	20	19	23

KIPS.

	lbs.	lbs.	d.	d.
Petersburgh	4 to	7	21 to	26
Do.	7	9	21	25
Do.	9	10	20	24
Do.	11	13	19	22
E. Ind. drysltd.	5	7	23	27
Do. do.	7	9	22	25
Do. seconds			20	22
Do. thirds			17	19
Do. inferior			13	16

SUNDRIES.

	s.	s.
Hog Skins, best ......each	14 to	21
Do. seconds ... ,,	8	14
Seal Skins, split, per doz.	64	80
Do. for bindings ,,	40	84
Calf Skins, Sumach, tanned ,,	50	68
Do. white ,,	30	45
Horse Hides, white, each	8	14
Sheep Skins—	d.	d.
Basils, unstrained, per lb.	9	16
Do. strained ,,	9	16
Do. facing, per doz.	6s.	18s.
Tan, Sheep, & Lambs ,,	10	20
White Sheep, per 120	80	110
Do. Lambs, ,,	60	110
Do. Sheep & Lambs, strained, per doz.	7	18
Sumach Roans, per doz.	20	36
Do. Skivers, ,,	10	16
Bark Skivers, ,,	9	16
Hide Splits, per lb.	10 to	12d

HIDE AND SKIN MARKETS.

LONDON, SATURDAY, OCT. 24.

MARKET HIDES.	s.	d.	s.	d.
56 to 64lbs......per lb.	0	5 to	0	0
64 to 72lbs.	0	5	0	5¾
72 to 80lbs.	0	5¼	0	5½
80 to 88lbs.	0	5½	0	5¾
88 to 96lbs.	0	5¾	0	6
96 to 104lbs.	0	6	0	6¼
104 to 112lbs.	0	0	0	0

	s.	d.	s.	d
HORSE HIDES, each	10	0 to	11	0
CALF SKINS, light.	3	0	5	0
Do. full	8	0	8	6
LAMBS	0	0	0	0
Kents & half-breds	4	0	5	0
Downs	3	4	4	0
Polled Sheep	5	6	6	6

BIRMINGHAM, SATURDAY, OCT. 24.

Per lb.

HIDES.	s.	d.	s.	d.
95lbs. and upwards	0	0	0	6¼
85lbs. to 94lbs.	0	0	0	6
75lbs. to 84lbs.	0	5⅞	0	6
65lbs. to 74lbs.	0	5½	0	5⅝
56lbs. to 64lbs.	0	0	0	5⅛
55lbs. and under	0	0	0	4⅞
Cows	0	4½	0	5
Flawed and irregular	0	4⅛	0	4⅞
Horse each	0	0	0	0
Bulls	0	0	0	4¼

Per lb.

CALF.	s.	d.	s.	d.
17lbs. and upwards	0	6⅛	0	0
12lbs. to 16lbs.	0	7⅜	0	0
9lbs. to 11lbs.	0	7	0	0
Light	0	6¾	0	0
Flawed and irregular	0	5	0	0
WOOL SKINS	0	0	0	0
PELTS	3	5	4	10
LAMBS	3	1	5	11

BAMFORD BROTHERS, Brokers.

BARK, &c.

LONDON, SATURDAY, OCT. 21.

	£	s.	£	s.
English, per load of 45 cwt., del. in London	16	0 to	17	0
Coppice	16	0	18	10
Dutch, per ton	5	0	5	5
Hambro'	4	10	5	5
Antwerp Tree	6	0	6	10
Do. Coppice	6	10	7	0
French	0	0	0	0
Mimosa	8	0	9	0
Do. Ground	0	9	10	0

	£	s.	£	s.
Cork Tree, Barbary	7	0	7	10
Do. Leghorn	6	0	7	0
Valonia, Smyrna, p. ton	13	0	16	0
Do. Camata	14	0	16	0
Do. Morea	11	0	13	0
Terra Japonica Gambier	18	0	18	5
Terra Japonica Cutch	61	0	63	0
Divi Divi	10	0	11	1
Myrabolams	8	0	13	0
Sumach, Sicily, p. cwt.	0	13	0	10

WOOL MARKETS.

ENGLISH WOOL MARKET.

LONDON, MONDAY, Oct. 26.—Since our last report great heaviness has prevailed in this market, and prices have had a downward tendency. The present state of the money market, the want of foreign orders, and the approaching public sales, added to the unfavourable commercial news from the United States, have had great influence upon buyers generally.

Per pack of 240lbs.

	£	s.	£	s.
Fleeces—Southdown Hogs	£19	10 to	£20	0
Do. Half bred Hogs	19	0	19	10
Do. Kent	19	0	20	0
Do. Southdown Ewes and Wethers	18	0	18	10
Do. Leicester do.	17	0	18	0
Sorts—Clothing, picklock	21	0	22	0
Do. Prime and picklock	18	0	19	0
Do. Choice	17	0	18	0
Do. Super	16	0	17	0
Do. Combing—Wether matching	20	10	21	10
Do. Picklock	18	0	18	10
Do. Common	15	0	16	0
Do. Hog matching	23	0	24	0
Do. Picklock matching	19	0	20	0
Do. Super do.	16	10	17	10

LEEDS WOOL MARKET, Oct. 23.—The sales of combing and clothing wools this week have been very small; prices, therefore, are in a great measure nominal, but are quoted rather in favour of the buyers.

LIVERPOOL WOOL MARKET, Oct. 24.

SCOTCH WOOL.—The demand for all kinds of Laid Highland and all other sorts of Scotch are on the most limited scale, and only for immediate wants at about late rates; if any difference it is in favour of the buyers.

	s.	d.	s.	d.
Laid Highland Wool, per 24lbs.	16	0 to	16	6
White Highland do	19	0	20	0
Laid Crossed do..unwashed	18	6	20	0
Do. do..washed	19	6	21	0
Laid Cheviot do..unwashed	20	0	22	0
Do. do..washed	22	0	24	6
White Cheviot do..washed	33	0	38	6

FOREIGN WOOL.—Since the close of the public sales here, there has, in consequence of the panic in the money market, and the fresh accounts of the commercial disaster in the United States, been little doing. Stocks, however, are light, and manufacturers being also light, they are obliged to come in for what they want every week.

Per lb. Duty Free.	s.	d.	s.	d.
German, Saxon, and Prussian. 1st and 2nd Elect	3	4 to	4	6
Prima	2	4	3	0
Secunda	2	0	2	4
Tertia	1	8	1	10
Australian & V.D. Land—Combg. & Clothg	1	5	3	1
Do. Lambs	1	2	2	6
Do. Locks and Pieces	0	10	2	2
Do. Grease	0	8½	1	10
Do. Skin and Slipe	1	1	2	2
S. Australian & S. River—Combg. & Clothg	1	6	2	6
Do. Lambs	1	4	1	9
Do. Locks and Pieces	0	10	1	3
Do. Grease	0	10	1	6
Do. Skin and Slipe	1	6½	1	9
Cape—Average Flocks	1	7½	2	3
Do. Combing and Clothing	1	1½	2	1½
Do. Lambs	1	4	2	6
Do. Locks and Pieces	1	4½	1	6½
Do. Grease	0	9½	1	5

MANURES.

PRICES CURRENT OF GUANO, &c.

	£	s.	d.	£	s.	d.
PERUVIAN GUANO, (per ton, for 30 tons) nominal	£13	5	0 to	£0	0	0
Do. Do. (under 30tons)	14	0	0	0	0	0
BOLIVIAN GUANO ......none	0	0	0	0	0	0

ARTIFICIAL MANURES, &c.

	£	s.	d.	£	s.	d.
Nitrate Soda (per ton)	£22	0	0 to	£23	0	0
Nitrate Potash or Saltpetre	29	0	0	30	0	0
Sulpht. Ammonia	21	0	0	22	0	0
Muriate ditto	27	0	0	28	0	0
Superphospht. of Lime	6	0	0	0	0	0
Soda Ash, or Alkali	9	0	0	10	0	0
Gypsum	2	0	0	2	10	0
Coprolite	3	15	0	4	0	0

	£	s.	d.	£	s.	d.
Sulph. of Copper or Roman Vitriol, for Wheat steeping	45	0	0 to	47	0	0
Salt	1	5	0	2	0	0
Bones, Dust, per qr.	1	5	0	1	6	0
Do. ½-inch	1	4	0	1	5	0
Oil Vitriol, concentrated, per lb.	0	0	1	0	0	0
Do. Brown	0	0	0¾	0	0	0

JOHN KEEN, 35, Leadenhall-street,
(Late Odams, Pickford, and Keen.)

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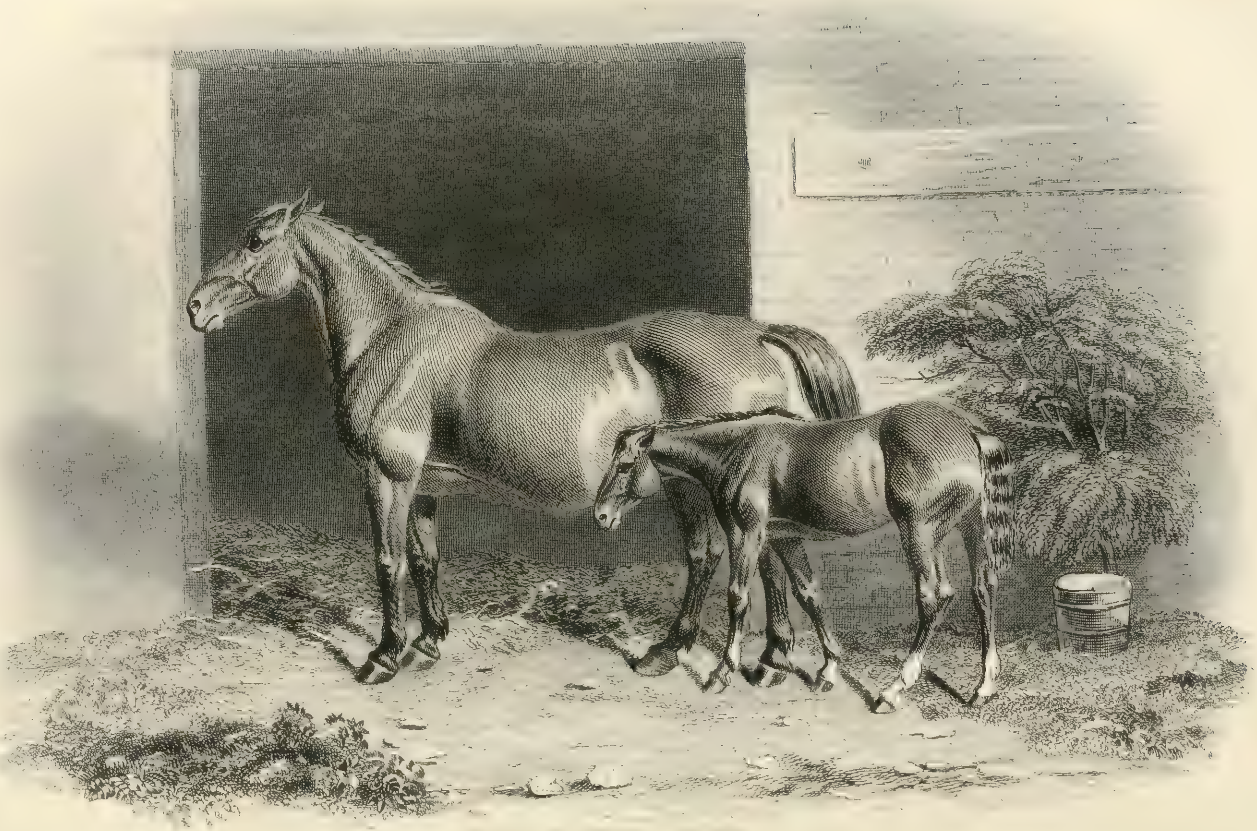

THE FARMER'S MAGAZINE.

DECEMBER, 1857.

PLATE I.

A SUFFOLK MARE AND FOAL.

LATE THE PROPERTY OF N. G. BARTHROPP, ESQ., OF CRETINGHAM ROOKERY, WOODBRIDGE.

This mare, known as "Darby of Exeter," was bred by Mr. Barthropp, at Cretingham, in 1841. She is by "Liverpool Captain," dam by Cottingham's horse, and grandam by Edwards' "Briton."

Darby has been a great prize winner in her time. In 1843, she took the first prize as the best two-year-old filly in Suffolk; in 1844, the first prize as the best three-year-old filly in Suffolk; in 1848, the first prize as the best cart-mare at the North Suffolk and South Norfolk Society; in 1849, the first prize at the East Suffolk Society; in 1850, the first prize at the Norfolk Society; the second prize of the Royal Agricultural Society, at Exeter; the first prize of the North Suffolk and South Norfolk Society; and the first prize of both the East and West Suffolk Societies. In 1856, being then fifteen years old, she took with her foal the second prize for cart-mares and foals at the Royal Agricultural Society's Meeting at Chelmsford. Darby was sold during this meeting, together with the foal, to the Rev. W. Beever, of Cowbridge, who is introducing the Suffolks into South Wales. With this view he has also purchased of Mr. Barthropp "Newcastle Captain," deservedly distinguished as the best horse for agricultural purposes, at the national Society's show at Newcastle, in 1846. In our report of the Chelmsford Meeting Darby is thus referred to :—"All the elements of a first-class mare are possessed by Mr. Barthropp's aged one, which took the second prize. We see now where he has got the shape and style that have gained him so much credit at our annual meetings. This is such a foundation as every breeder should build upon. The chief point of excellence that characterises her is, perhaps, the deep muscular thigh; but she is good all over. The foal is very superior."

Mr. Barthropp has long been celebrated as a breeder of "Suffolks," still considered by many to be the best sort of agricultural horses we have. On our annual visit to the county shows we are always sure to find his amongst the best, while he has also had great success at the different meetings of the Royal Society. As we have already mentioned, his first prize horse "Captain" was one of the chief attractions and sensations of the Newcastle Meeting, where people had been taught to look more to the hairy heeled Clydesdales. Not going back quite so far as this, but ranging only from 1848 up to the present year, Mr. Barthropp has taken *ninety-five* prizes for Suffolk cart-horses. We believe that no one breeds them with more care or judgment, and consequently that no one could better deserve the reputation he has achieved with them. Barthropp and Suffolks are now as much associated as the Booths and Shorthorns, or Jonas Webb and Southdowns.

PLATE II.

"BENDIGO;" A PRIZE PIG, THE PROPERTY OF MR. G. MANGLES, OF GIVENDALE, RIPON.

This boar, a capital cross of the Improved Cumberland and Yorkshire small breed, has taken the following premiums during the present year:—At the Royal Agricultural Society of England's Meeting at Salisbury, the first prize of 10 sovs. as the best boar of a small breed. In addition to the second prize, four other boars were commended in this class, and, as will be remembered, the show of pigs was *generally* commended at Salisbury. It was the best entry the society has ever had, and gives Bendigo rank accordingly.

At the Yorkshire Agricultural Society's Meeting at York, he took the first prize of 5 sovs. as the best boar of a small breed, and at Cornhill the Duke of Northumberland's prize of 10 sovs. as the best boar.

"Mr. Mangles," says our own report of the Yorkshire meeting, "has justly taken a high position in the small breed classes, his prize sow being of remarkable breadth, and splendidly filled out in all points; and his three store pigs wonderful for fine and delicate quality." This sow, which also took the first prize in her class, is an own sister to Bendigo; and the pen of three pigs, another first prize, are by him. The dam of Bendigo was *specially commended* at Chelmsford; so that the breed, or even family, are famous. Mr. Mangles, indeed, has been gradually but surely getting to the top of the tree with this sort. Since 1853 he has taken with them, at the shows of the Royal Agricultural, Yorkshire, and Northumberland Societies, twenty-five prizes and twenty-six commendations. Their especial merits are early maturity, lightness of offal, aptitude to fatten, and delicacy of quality.

The following communication, which has been lately forwarded us, comes very appropriate to the subject of this plate:

SIX YEARS' EXPERIENCE IN PIG-BREEDING.

By an Amateur.

Whoever may have attended the meetings of the Royal Agricultural Society the last few years, cannot have failed to notice the great dissimilarity existing between the different breeds of pigs shown, and the great improvements that have taken place in the several classes. You see there the Essex, the Suffolk, the Yorkshire, the Cumberland, and several other breeds out of different counties, all to the best perfection; and any one fond of following that part of farming economy may learn many useful lessons.

Being wishful to obtain a breed of pigs that would pay for what they consumed and bear confinement, I tried several breeds, so as to be able to keep the one most profitable. I first tried the Essex, and then the Leicester, and the large white breed, and the Cumberland, and the Yorkshire small breed, and I tried the Berkshire, and also the different crosses. But keeping the pounds, shillings, and pence matter in view, I found that by judiciously crossing the Cumberland and Yorkshire small breed I obtained a breed possessing the different qualities I wanted, making either roasters, small or large porkers, small or large bacon, all depending on age and feeding. From the Cumberland I got size, and from the Yorkshire quality and symmetry; and for early maturity, lightness of offal, and aptitude to fatten, no breed of pigs can surpass them, and they graze like sheep.

In breeding, the sow should be larger than the male, and the male the most perfect of the two, as the sows will generally breed to the boar, that is, the good or bad points of the male will preponderate more in the young ones than those of the sow. And I have found that the boar the sow may have had pigs to, the litter before, has a great deal to do with the following litter. I once put a black sow to a white boar, and had some black and white pigs; I then put her to a black boar, and still had some black and white; and I had to wait for three litters before getting rid of the white. I once purchased a large-bred Yorkshire boar, and more than 90 per cent. of his stock died from inflammation of the lungs, or were more or less affected. I afterwards learned that the sire of the boar died from the same complaint. All this convinced me how particular one should be in using a pure and sound male animal.

I found change of climate affect pigs very much, as the animals I bought never did so well at first as those bred upon the place; and high-bred stock of any description require different treatment to common or cross-bred animals.

I remember once selling a young boar to a gentleman, and in a few months having that said boar returned in a very pitiful condition, not being able to stand. The gentleman had called in a veterinary surgeon, who had laid a charge upon the animal's back. I soon took the charge off with a few stones of flesh; and with different treatment the pig soon came round, and has since gained for me several prizes, including the first prize of the Royal Agricultural Society of England; and he has been the sire of some valuable stock. I mention this to show how often a valuable animal is destroyed, and the breeder condemned, through the want of proper knowledge on the part of the purchaser.

I have bred upwards of four hundred pigs in a year, and with respect to the different diseases affecting swine, am happy to say I have had very little to do with, of late. I found that by not transgressing Nature's laws, and plenty of good air, with plenty of nutritious food whilst young, and not overcrowding, in warm and dry sties, the diseases were very few, and chiefly skin diseases.

I have found the tails of some of the young pigs the greatest trouble to keep on; and I have never seen any remedy offered that has entirely succeeded. By attending to the young pigs in time, I can save nine out of ten.

[illegible]

[illegible]

THE EMPLOYMENT OF SEWAGE.

BY CUTHBERT W. JOHNSON, ESQ., F.R.S.

Much and often has been urged upon the importance of utilizing sewage, but hitherto to little public advantage. Succeeding generations of Englishmen will have, indeed, cause to ridicule the tardiness with which we, the enlightened denizens of the nineteenth century, provided against such losses. Future Macaulays will tell how copiously we *talked* over the pestilential drains of our huge cities; how staunchly we opposed every plan propounded for the removal of the foul streams which poured into our rivers. Such historians may very likely allude to these facts as one of the many recorded instances of really wise persons acting in bodies as if they were devoid of all reflection. It may hereafter form an amusing page, when the account is given of the stout denials with which the asserted agricultural value of sewage was met by the lovers of everything that is stationary. It may be said in such a detail that, though the great meads of Milan, Edinburgh, Clipstone, irrigated by town sewage, had for many long years shown by their enormous amount of grass that town sewage is most valuable in one way, at least, for agricultural purposes, yet that, in the year 1857, its importance was denied, and all attempts to aid its application in this way as stoutly opposed. There has been recently, however, under the auspices of Sir Benjamin Hall, a few slight appearances of an earnest endeavour to attempt something in this way as regards the sewage of London. Some valuable and comprehensive reports have been made by the Government engineers; a commission has been sent to Milan to examine and report upon the sewage-irrigated meads of Northern Italy, and a kind of an undefinable dream seems to be stealing over the metropolitan commissioners that something for the useful employment of the sewage of London ought to be attempted.

It will be well if the numerous readers of this magazine remember these things at the present period. It should, indeed, be especially urged by the landholders, upon those to whom the great metropolitan trunk drainage plan is entrusted, the importance of remembering the claims of agriculture to the use of the sewage; that to promote these objects the higher the level of the main sewer, the greater will be the extent of land to which its contents will flow by its own gravity. Let such engineers also be made aware that the further the stream of sewage flows from populous places, the more valuable it becomes as a fertilizer. The same remark, in fact, applies to many other manures: for instance, the same weight of town dung which is worth twelve pence in London, is worth twelve shillings fifty miles from the metropolis. In the one place the supply is greater than the demand; in the country the demand is greater than the production.

Then, again, it must not be forgotten that the chief, the best use of sewage, is in the irrigation of grass land. Now, in the immediate neighbourhood of towns, the pastures are commonly either not readily obtainable, or they are subject, when irrigated by impure water, to certain real or imaginary sanitary objections. Odours are supposed to arise—disease is suspected to be caused by their emanations. Such obstacles do not arise in a thinly-populated country. Let me instance the case of the proposed course of the sewage of northern London towards the sea. The marshes of Essex here offer abundance of land suitable for sewage irrigation. Take the course of the Thames, or examine that of the little river Crouch, which rises near Brentwood, and falls into the sea at Burnham. On the banks of this stream there is hardly a village to be met with: large marshes here present themselves, tenanted only by live stock.

The clay soil, too, of these great pastures, is fortunately the best adapted to the purification of liquids rich in organic matters. On this important branch of the inquiry, the lately-published results of Professor Voelcker's inquiries are well worthy of our patient examination. They will repay us, too, in other ways, if we study them carefully. In these we may include the important questions of Autumn manurings and the top-dressing of pastures. The following trials of Mr. Voelcker were made with the drainage from a rotten dung-heap. He tells us (*Jour. Roy. Ag. Soc.*, vol. xviii., p. 140):—

"The surface-soil employed in this trial contained a good deal of organic matter, a fair proportion of clay, little sand, and a moderate proportion of carbonate of lime in the form of small fragments of limestone. It was a stiffish soil, belonging to the clay-marls. Its subsoil was richer in clay, and of a more compact texture and less friable character than the surface-soil. The mechanical analyses of soil and subsoil gave the following results;—

	Surface-soil.	Subsoil.
Moisture when analyzed....	5.36	3.66
Organic matter and water of combination	25.86	8.79
Lime	14.30	26.03
Clay	34.84	56.76
Sand	19.64	4.76
	100.00	100.00

"In the chemical analysis of this soil the following results were obtained:—

	Surface-soil.	Subsoil.
Moisture when analyzed....	5.36	3.66
Organic matter and water of combination	25.86	8.79
Oxides of iron and alumina..	13.88	10.13
Carbonate of lime..........	14.30	26.03
Sulphate of lime	.56	Not determined.
Phosphoric acid and chlorine	traces	
Carbonate of magnesia	1.04	1.67
Potash	.07	
Soda	.18	
Insoluble siliceous matter ..	38.75	49.73
	100.00	100.00

"2,000 grains of this soil and 2,000 grains of subsoil were mixed with 4,000 grains of the liquid from rotten dung. After 24 hours, the clear liquid was carefully drawn off and filtered. Its original dark brown colour was changed into a pale yellow colour. This soil thus possessed in a high degree the property of decolourizing dark-coloured liquids like the washings of dung-heaps.

"In both instances it was thus found that rather more than two-thirds of the amount of ammonia present in these drainings in the form of ammoniacal salts were retained by a very limited quantity of soil.

"I have purposely used a large amount of liquid in comparison with that of soil. If, under such conditions, the soil is capable of retaining two-thirds of the whole amount of ammonia present in a liquid like the one examined, it is not too much to expect that no ammonia whatever will be lost in practice by carting manure on the fields in autumn, and spreading it at once. The quantity of soluble ammoniacal matters in a heavy dressing of the best dung does not amount to many pounds, and such a quantity, in relation to the weight of the soil ready to take up ammonia from the manure, is so insignificant, that the most scrupulous may rest satisfied that in a soil containing even a small proportion of clay, no ammonia will be lost by dressing the fields in autumn.

"For better comparison sake, I will give the composition of the drainings before and after passing through soil, and then make a few additional remarks, which are suggested by such a comparison.

COMPOSITION OF DRAININGS FROM ROTTEN DUNG.

1 imperial gallon contains—

	Before filtration	After filtration through soil.
Ammonia (in the form of ammoniacal salts).......	19.68	6.91
Organic matters	134.05	118.50
Silica	.75	2.38
Phosphates of lime and iron	7.90	1.54
Carbonate of lime..........	17.46	79.72
Sulphate of lime	2.18	7.92
Carbonate of magnesia	12.83	6.17
Chloride of sodium	22.85	18.90
Chloride of potassium......	35.25	26.44
Carbonate of potash.......	85.27	4.29
	338.22	272.77

"It will be observed that this liquid, in passing through the soil, has undergone a striking change. Leaving unnoticed several minor alterations in the composition of the original liquid, I would direct special attention to the very small proportion of carbonate of potash left in the drainings after contact with this soil. It will be seen that, out of 85 grains of potash contained in the original liquid, no less than 81 grains have been retained by the soil. This is a result of the greatest importance, inasmuch as it shows that the soil possesses in a remarkable degree the power of removing from highly-mixed manuring substances not only ammonia from ammoniacal salts, but also the no less important soluble potash compounds.

"In some subsequent experiments on a light, sandy, red-coloured, very porous soil, containing only little clay and still less lime, but a good deal of organic matter, its mechanical analysis was:—

Moisture	3.45
Organic matter and water of combination......................	13.94
Coarse white quartz sand	47.00
Fine red sand and a little clay deposited from water on standing 5 minutes	19.82
Coarse clay deposited on standing 10 minutes	2.82
Fine clay deposited from water on standing for 1 hour	6.30
Finest clay kept in suspension in water after standing longer than 1 hour	6.67
	100.00

Through this soil a gallon of the drainage from fresh mixed farm-yard dung was passed, when the results were obtained which are given in the following table:—

	Before filtration	After filtration
	through soil.	
Ready-formed ammonia	7.67	7.13
* Organic matters	358.40	301.70
** Inorganic matter (ash)	312.90	245.70
Total of solid matter ..	678.97	554.53
* Containing nitrogen	15.54	12.60
Equal to ammonia	18.86	15.30
Silica....................	4.75	15.08
Phosphates of lime and iron	36.32	33.14
Carbonate of lime..........	29.79	21.22
Sulphate of lime	7.14	trace
Carbonate of magnesia	4.98	2.36
„ potash	148.69	85.93
Chloride of potassium......	30.32	39.49
„ sodium	50.91	48.48
** Total of ash......	312.90	245.70

"The amount of ready-formed ammonia retained by this soil, it will be seen, is very trifling indeed; nor is the proportion of nitrogen which is retained in the soil in the form of nitrogenized organic matters very great. We are thus presented with an instance, showing clearly that there are soils which do not possess the power of absorbing ammonia in any marked degree. In the case of such soils as the one used in this experiment, I think it would be hazardous to apply manure in autumn. I may also mention a curious circumstance in connection with this soil. I am informed that guano and ammoniacal manures do not here seem to do much good, whilst the application of nitre is followed with marked effect."

The reader, when he is studying the varying yet always considerable power of cultivatable soils to absorb the impurities of decomposing substances, will not fail to remember that the trials of Voelcker, of Thompson, and Way where made with impure liquids on soils *free from plants*. If, then, we are calculating the deodorizing or purifying powers of a given extent of soils, such as those which these chemists examined, we must make a large addition when we regard the same extent of land densely tenanted with the grasses. That plants possess very considerable powers in this way, was long since shown by the experiments of Saussure and others with, plants placed in various solutions of saline and organic matters.

By such modes of purifying our rivers, by intercepting our sewage, let us not forget, too, that we are taking another leaf from Nature's book, and that her teachings are founded on God's laws. I have often had occasion to allude to that truth, and I am glad to find that Dr. Cameron, in his "Chemistry of Agriculture," is with us on the question. He observes (*Irish Farmers' Gazette*, vol. xvi., p. 957) :—

"I do not mean to assert that the identical lots of guano which are daily landed on our quays did actually pass down our river in another form; but I do say what is of equal practical importance, that the raw materials from which guano is prepared by the natural producers of that article are to be found every day in the rivers of all the cities in the world, and in such quantities as must appear incredible to those unaccustomed to reason on such matters. These materials, the contents of our sewers, are carried into the sea, and there furnish food for vast fields of marine plants. These plants, in their turn, go to support the teeming animal life of the ocean—the multiform denizens of the deep. Of these, generation succeeds generation, and myriads of them, in ceasing to dwell in the 'water under the earth,' become the food of birds which move in the 'Heavens above.' The excreta which these deposit in their resting places, and the bodies which they ultimately lay down in death, form accumulations similar to those enormous guano banks which of late have become of such commercial importance throughout the entire civilized world, given so great an impetus to agricultural improvement, and so largely contributed to supply the demand for food of an increasing population.

"This seems going at a great distance for proof and illustration of the value of what lies, or rather runs, under our feet. The journey will not, however, be considered by any means too great, if the knowledge acquired is found in the end to have contributed in any measure to the realization of the practical truth involved in it. An important object is gained if it teach the citizen and farmer the advantage which both would derive from the direct application to our soil of those streams—rich in the *food of plants*, but fraught with poison to animals—which flow from the filthy veins of our cities, and are lost in the ocean."

THE POTATO DISEASE.—ITS EXTENT AND ORIGIN.

The return of the epidemic disease, which for the last twelve years has, with short intervals, committed such ravages on the potatoes, gives reason to fear that its continuance may be calculated on, or at least that the growers can never be sure of immunity from its ravages. We have been making inquiry among the London potato merchants respecting the extent to which the tubers are affected, and we are sorry to find them in perfect despondency as to their being able to preserve their usual stock, or indeed any at all, through the winter. In many instances, consignments that we resent off from the growers, to all appearance in a perfectly sound and healthy condition, have, on their arrival, exhibited symptoms of the disease, and in a few days after become wholly unfit for food. In the fens of Lincolnshire and Cambridgeshire the disease is very general and destructive. Many of the growers there have their whole crops affected, so far as to be unmarketable, and are consuming them by their cattle and pigs as fast as they can; being convinced that to keep them would ensure a total loss. All are desirous of getting even those least affected to market as speedily as possible; but the dealers are exceedingly cautious, and will not purchase any that exhibit indications of the disease, except at a very low price. One of them offered to purchase us one hundred tons at 12s. or 15s. per ton.

Under these circumstances we would strongly recommend those who hold large quantities of diseased tubers to manufacture from them the starch, the process of which is exceedingly simple and easy. It is a remarkable feature of this disease that it does not affect the starch, which from some inherent property possesses the power of resisting its attacks. This probably arises from the quantity of carbon it contains, and the entire absence of glutinous or fibrous matter in its constituents, which consist chemically of 12 carbon, 10 hydrogen, and 10 oxygen, the two latter being the elements of water. By extracting the starch therefore, from the diseased potatoes, the growers may recover the full value of their crops, the proportion obtainable being from 15 to 18 per cent. of the gross weight of the potatoes, and the price of the starch when dried, from £18 to £24 per ton. This would yield a much better return than selling the crop in its raw and diseased state. The washed pulp also, if dried, is excellent food for cattle and pigs, and constitutes about 5 per cent. of the weight of the potatoes.

Notwithstanding the attention that has been paid to this disease since its first appearance in this country in 1845, both by scientific and practical men, nothing at all decisive or satisfactory has been elicited respecting its origin. Many causes have been suggested, but subsequent experience has shown them all to be secondary and exciting rather than primary and originating. That its origin is to be ascribed to external influences, and not to any inherent defect, whether constitutional or superinduced in the plant itself, is proved by the fact that diseased tubers have produced sound ones when planted; and also that the tops of the plants have first shown symptoms of the disease. These, however, are only negative proofs; and we must still look upon the disease as analogous to cholera, influenza, and other epidemics with which the human frame is attacked, and which are equally inscrutable in their origin and progress.

Nor does there appear to have been any cure or prevention of the potato disease discovered, although many have been suggested. All have failed in subsequent experiments, and it is now as much beyond human control as when it first broke out. A singular instance of exemption, however, occurred this season in Lincolnshire, which was related to us by a dealer in Covent Garden market. A farmer, we believe near Long Sutton, planted fifteen acres last spring on a *pure sandy soil*, worth about 10s. per acre. The adjoining field was a rich loam, and let at 50s. per acre. Both these were planted with the same stock, and tilled and manured in precisely the same manner. The difference in the two crops was about two tons per acre; but whilst that on the best land was almost wholly diseased, the tubers on the sand were almost as entirely free from it.

These results are wholly unaccountable, on any known principle of the laws of nature. If the cause of the disease is atmospheric, what reason can be given for the exemption of the sand, so contiguously situated with regard to the loam? If it was inherent in the constitution of the tubers, both must have been affected, unless there is some property in a sandy soil that counteracts its development. It could not have been in the manure used, for both were treated in every respect alike. Nor could it have been caused by excess of cold or moisture in the season, for we have never had one more apparently favourable to a rapid or healthy vegetation. All speculation therefore is completely at fault in respect to the origin of this insidious and mysterious disease, which is peculiar to no country or climate—is influenced by no peculiarities of soil or mode of treatment; for in other instances potatoes grown upon a sandy soil have been equally attacked, although in some instances with less violence, by the disease.

The extent to which this visitation has this season prevailed will seriously affect the general stock of food, and must cause an extra pressure upon the supply of cereal food, when the diseased crop is disposed of, and this must be speedily done, if the growers desire to make anything at all of it. There is not a hope of being able to save the usual supply for spring and summer use, or any adequate proportion of it. Its place therefore must be supplied by bread, the consumption of which will be proportionately increased. What effect this will have upon prices remains to be seen; but it will materially depend upon the supplies we obtain from abroad, which cannot now be ascertained until next spring. The American crisis will prevent any large importations from that quarter before the frost sets in; but we shall probably have considerable supplies from thence when the canals again open. These cannot arrive here before May and June, and we have a six months' interval to provide for. Fortunately, we have had an abundant wheat crop, that will help us through without any serious pressure.

MR. FISHER HOBBS.—The "Hollandsche Landbouw," the principal agricultural society of Holland, elected Mr. Fisher Hobbs an honorary member at their last meeting. The compliment was conveyed to Mr. Hobbs in a very courteous note from Mynheer D. R. Gevers Deijnoot, the "Secretary-General" of the Society.

OBSERVATIONS ON THE PLANTS WHICH FORM THE BOGS IN IRELAND.

BY D. MOORE.

[*Read before the British Association at Dublin, August,* 1857.]

On reading the different reports of the Commissioners who were appointed to examine into and report on the nature and capabilities of the bogs of Ireland, the idea will occur to those acquainted with the matter, that ampler details of the plants whose growth and decomposition constitute the various kinds of bog therein mentioned would have rendered those able reports more interesting, particularly in a natural-history point of view. But surveyors are not often botanists, and probably do not consider it any part of their duty to enter into such minutiæ. Besides, a good deal has since been written at various times on the subject of Irish peat bogs, without anyone having filled up the hiatus I have alluded to, so far as I am aware. The case is different in Dr. MacCulloch's report on the peat bogs of Scotland, who has paid particular attention to the plants which form the different kinds of turf enumerated by him, and has based some of his principal reasonings on the formation of peat from his knowledge of the slow or quick growth of these plants. It therefore occurred to me, that in a country like this, which has so large a portion of its surface covered with bogs, and where bog labour is a very considerable source of productive economy, a short paper on the plants which enter principally into the formation of our peat bogs might prove an appropriate subject for being discussed at this meeting of the British Association. The different varieties of bog which have been chiefly distinguished by writers on the subject in this country are red bog, brown bog, and black bog, which, although not very scientific, yet being the names by which they are best known, I shall adhere to, in the following details; and first as to

Red Bog.—The differences of colour and consistencies of matter, of which the substances are composed, depend chiefly on the localities where they are produced, according as they vary in different degrees of moisture, temperature, and altitude, whereby the growth and decomposing of vegetables are affected. No doubt that iron and some other mineral substances which are generally found in peat bogs affect the colouring to a small extent, but the former combination of causes produces the effect principally.

By far the greater portion of our extensive bogs belong to this variety, which is the least valuable for fuel, and generally varies in depth from 10 to 35 or even 40 feet. Those immense deposits of vegetable matter appear to have been accumulating during many ages in the same positions and under nearly similar circumstances as we find them at the present time. It may very fairly be inferred that the processes of growth and decomposition of plants are now much slower than they formerly were, owing to the greater elevations the surfaces of the bogs have attained above the levels of the drainage rivers, and the more general drainage of the surrounding districts; but in the absence of all trustworthy experiments on the growth of bog in Ireland this only amounts to conjecture. When passing over bogs I have frequently inquired of turf cutters when the turf was cut out of holes I saw partially filled with soft vegetable substance; and if some of their statements can be depended on, that soft half-decomposed matter will accumulate to the depth of one foot in five years, which we may suppose will ultimately be compressed to at least one-fourth part of that bulk.

Wherever those bogs are of any considerable extent, and remain in nearly their natural state, without deep cuttings having been made through them to drain off the surface water, a series of depressions will invariably be found on their surface, though not perceptible to the eye when looking over the apparent level expanse of wild waste they form. It is only when one enters on them this is found out, by sinking deeper, and perceiving the whole surface shake for many yards around. When covered over with vegetation the soft parts are called flows or quagmires; but those depressions frequently consist of a series of deep water holes, which are probably for the most part remaining portions of large lakes yet in process of being filled in with vegetable debris. These quagmires may, and no doubt often do, result from springs, as they frequently occur at nearly the culminating points of the bog.

Taking those flows and partially-filled-up waterholes into consideration, with the elevated surrounding districts which generally prevail in the neighbourhood of large bogs, the conclusion that has been mostly come to is, that those great natural basins were, at a former period, either lakes which have been gradually filled in, or wild morasses. The small quantity of wood found in them, and that only near the edges, favours the hypothesis of lakes, besides the kinds, that are generally birch and willow, with a little alder, such as grow on very wet places at the present time. The plants which chiefly enter into the composition of red bog may be conveniently divided into two sections, namely, those which grow on the higher and drier spots of the present surface, and those which flourish in the marshy places, and in and near water-holes. On the former of these, Narthecium ossifragum, Eleocharis cæspitosa, Carex stellulata, Schœnus nigricans, Erica tetralix, and Myrica gale, may be said to form the framework which bears up the mass; whilst Sphagnum cuspidatum, S. acutifolium, S. cymbiforme, and S. squarrosum are the bog mosses which fill up the interstices, and ultimately become decomposed along with the phanerogamic plants already enumerated. On the marshy parts of the bog Menyanthes trifoliata, Comarum palustre, and Eriophorum angustifolium mix their decumbent and running stems over the surface of water, which soon become matted together by the growth of their different roots, and capable of bearing up Vaccinium oxycoccus, Narthecium ossifragum, and Sphagnum acutifolium, which latter is generally the species of bog moss found on the wettest parts, and admirably adapted for filling up water pools, in consequence of being thickly set with pendulous branches, which secure abundant supplies of moisture, as they take it up by capillary attraction, besides their annual growths as less destructible from moisture than those of the other species. In this way bog is soon formed.

A different set of plants contribute to fill up the deep water holes and lakes. Nymphæa alba, Nuphar lutea, Potamogeton natans, P. rufescens and lucens, Hippuris vulgaris, Myriophyllum spicatum, and M. verticillatum are the species which mostly float in these localities, and supply vegetable matter by the decay of their stems and leaves, on which the roots of the Nymphæas are enabled to elevate themselves nearer to the surface, and prepare for the growth of Menyanthes, Comarum, &c. The accumulation goes on very quickly in limestone districts, where the larger species of Chara abound, which have their stems and branches thickly incrusted with a deposit of calcareous matter. The debris resulting from the decay of Chara hispida alone, where it grows freely, would soon fill up a shallow pool, preparatory for the growth of plants higher in the scale of vegetables.

Along the margins grow species which fill in by their creeping rhizomes and stems. Typha latifolia, Sparganium ramosum, Carex ampullacea, and Helosciadium inundatum are the prevailing kinds on deep bog; whilst Phragmites communis, Phalaris arundinacea, Scirpus lacustris, Eleocharis palustris, Iris pseudocorus, and Carex stricta grow more abundantly on the margins of lakes, and wherever there is slow running water. By the growth and decay of those plants in the localities specified, along with a few others of less importance, the greater part of the red bog in Ireland is now being formed, and so far as I have been able to judge from turf cut at great depths, nearly the same species appear to have formed it from the bottom upwards, though, probably, at different ratios of growth from that they now do. Equisetum fluviatile, Potamogeton polygonifolius, P. plantagineum, Carex teretiuscula, Cladium mariscus, Alisma plantago, Calluna vulgaris, Rhynchospora alba, Drosera rotundifolia, longifolia, and anglica are the other plants which chiefly deserve notice for the comparative proportions they enter into in the formation of this variety of bog, which, according to the report of the Commissioners appointed to report on the nature and extent of the Irish bogs, covers upwards of a million of English acres, more than two-third parts of which is westward of the river Shannon.

Brown Bog.—The kind thus named appears to be only a state of the red, differently coloured by mineral substances, or from the matter being in a more decomposed and compressed state, owing to its occurrence at greater depths. I shall therefore not dwell more particularly on it, but proceed to consider the kind called black bog, which next deserves attention from its extent and usefulness.

Black Bog occurs in isolated patches among the red and more fibrous bogs, and appears, from the solidity and darkness of colour of the matter of which it is composed, to have been formed on sites of small lakes, which have been slowly and gradually filled up by the decomposition of such floating plants as are now forming matter to fill up the water-holes on flow bogs, viz., Nymphæas, Potamogetons, Charas, &c. That found at great depths resting on the bottom, and sometimes nearly as solid as coal, results from age and compression, and may have been formed by the same plants as the red bog. By far the greater portion of black or turbary bog seems to have accumulated on the sites of ancient forests, which either covered over large portions of the country, or skirted along the margins of morasses, as is evident from the number of roots and trunks of trees found it it.

It is the most valuable for fuel, owing to the large quantity of woody matter it contains, and varies in depth from 3 to 20 feet or more. The plants which are now growing on the surface, and appear to have been those which formed the principal part of the matter the mass consists of, are Calluna vulgaris, Erica tetralix, Andromeda polifolia (which latter only grows on bogs in the central counties of Ireland), Juncus effusus, J. conglomeratus, J. acutiflorus, J. uliginosus, Eriophorum vaginatum, Molinia cœrulea, Aira cæspitosa, and Pteris aquilina. These combined constitute the woody and fibrous portion; whilst the bog mosses Sphagnum cymbiforme, S. squarrosum, Polytrichum commune, with several species of Hypnum and the Lichens Cenomyce rangiferina and C. uncialis, form the greater part of the soft spongy portion, which retains moisture and ultimately consolidates into turf.

A few more species of grasses besides those already mentioned also grow on this kind of bog, such as Aira flexuosa, Agrostis alba, Triodia decumbens, Holcus mollis, and H. lanatus. The trunks of trees which often occur in such abundance on this kind of bog consist of Scotch fir (Pinus sylvestris), oak (Quercus robur), birch (Betula alba), alder (Alnus glutinosa), and hazel (Corylus avellana). The oak is found for the most part near the margins of the bog, with the roots resting on the clay or marl bottom, whilst the firs extend further towards the centre, and their roots generally rest on several feet of bog, thus affording proof of a considerable deposit of vegetable matter having taken place before they vegetated on it. Judging from the roots and trunks found, the trees appear to have grown to a large size, when, by natural decay, or probably by storms, and often by fire, they fell and became covered over by the gradual growth of the bog, until sufficient matter accumulated for seedling plants growing over and above them. In this way the pines appear to have died out, and to have been replaced by younger plants, according as the bog increased in growth up to the present surface, there still being a few surviving trees of the ancient stock growing on the Earl of Arran's property in the county of Mayo. The finding of those roots and trunks at different elevations, the one frequently placed above the other, has led some persons to suppose there have been distinct and successive growths of those forests, some of which consisted partly of species of trees not found now in Ireland; but, so far as my investigations have gone, I have not perceived anything that could warrant such a conclusion being come to.

It is stated by Mr. Babington that the late Professor Don referred some cones sent to him from Irish bogs to Pinus Mughus, which circumstance has been quoted by M. De Candolle in his late work "Geographie Botanique;" but those who are best acquainted with the varied appearances of the cones of the common Scotch fir, as they grow on contiguous trees in the same forest, will consider the instance noticed as only very slight proof of Pinus Mughus ever having formed part of the timber found in our bogs. Although it appears to be a settled fact that the Norway spruce (Abies excelsa) once grew in England, where it died out, and has not reappeared in a natural state, there exists no proof of that species ever having grown in Ireland. The Irish bog formations would seem to be of a more recent date than the time of the glacial epoch of geologists, excepting probably that of Lough Neagh, and it would be very hazardous to state what particular species some of the fossilized wood belonged to, which is found there. Abundance of the common yew and some mountain ash are frequently found in those bogs at great depths under the surface, both of which grow naturally in many parts of Ireland at present. Willow, holly, and the common white thorn are the only other kinds of trees whose trunks are found of any considerable dimensions in our bogs, and they all grow naturally on those curious drumlins and eskars which occur so frequently near bogs.

A *variety of compact black bog* is to be found at a higher level than any of the former kinds mentioned. This covers large tracts on the slopes of the mountains at considerable elevations above the sea level, and affords excellent turf for burning. It seems to have increased very slowly, especially where the drainage is free; but in the level basins where water lodges it is frequently of great depth, and increases fast. The plants which are now growing on the surface, and appear to have mainly contributed to form the peat on the latter, are Juncus squarrosus, Eleocharis cæspitosa, Calluna vulgaris, Erica tetralix, Nardus stricta, Carex stellulata, C. cæspitosa, with the sphagnums and lichens already specified, and Jungermannia juniperina in the southern and western counties, all of which mix with the woody branches of the heath and the running roots of the Junci, causing them to decay into a mass of decomposed vegetable matter. On the drier slopes, where the fall is so great as to prevent water from lodging, the best kinds of peat earth for horticultural purposes are found, particularly on sandstone formations, where the debris of the rock enters largely into the composition. The plants which generally prevail on this kind of bog are Calluna vulgaris, Erica cinerea, Empetrum nigrum, Vaccinium myrtillus, V. vitis idæa, Andromeda polifolia (the latter in Connemara only), Aira flexuosa, Potentilla tormentilla, with Hypnum squarrosum, H. Schreberi, Racomitrium lanuginosum, and Cenomyce rangiferina, which, combined in a state of decomposition, constitute the principal part of the mass.

The last variety of bog which I shall particularly specify may be truly called mountain bog, being formed on and near the summits of some of our highest mountains, especially those which are situated in the northern counties, and the counties of Dublin and Wicklow, which reach elevations above the sea varying from 1,000 to 2,000 feet and upwards. The tops of the higher mountains in the southern and western counties are of a drier nature, and produce only a scanty vegetation, as Neptrin in the county Mayo, Carran Tual in the county Kerry, the Galtees and Knockmeildown ranges in the county Tipperary.

The depth of this mountain bog varies from 2 to 12 feet or more, as mentioned by Colonel Portlock in "Memoir of Ordnance Survey of County Londonderry," to be the depth of the bog on Knocklayd, at an elevation of 1,685 feet, which I have seen and examined. Sawel mountain, in county Londonderry, has also deep bog near to its summit, which is 2,000 feet high, besides Djoice mountain in county Wicklow, and most of the Dublin mountains afford examples of deep bog on or near their summits. It varies much both in colour and different states of compression and decomposition, being sometimes brown, soft, and fibrous, and at others black and very hard, although the plants which form it are few, and the same species in most instances. Here the Sphagnums do not enter so largely into the mass as they do lower down, and their places are in a great measure supplied by the grey moss, Racomitrium lanuginosum, and Cenomyce rangiferina, which together make up nearly one-half of the whole. Eriophorum angustifolium and E. vaginatum are the Phanerogamic plants, which bind the Cryptogamic together with their creeping roots, particularly the former species. I have occasionally seen great patches of Luzula sylvatica growing in these localities, and entering largely into the composition of the peat, which is always soft, brown, and fibrous, when that is the case.

Such are the observations I have been able to make on the plants from which our vast extent of peat bogs have been mainly formed, after having had opportunities of examining them, such as few men have had, during the last 25 years, partly whilst in connection with the Ordnance Survey of Ireland, and partly whilst executing some of the duties of my present office.

FRANCE AS A COMPETING COUNTRY IN THE GROWTH OF CORN.

In a recent number we drew attention to a decree of His Imperial Majesty of France, dated from the Camp at Chalons, extending to the year 1858 the restrictive laws and regulations which for the last seven years had closed the French frontiers to the exportation of agricultural produce, whilst foreign kindred commodities had free access to the French markets, there to compete with the produce of native capital and industry. We demonstrated that such a measure, harsh and unjust as it may appear, was not likely to exert any great amount of influence on the price of corn, inasmuch as foreign merchants would be enticed to send their goods to France only when the market was sufficiently buoyant to warrant an expectation of profit. Foreign competition cannot, then, induce lower prices after a certain limit has been passed—that limit being the lowest price at which importation can pay.

Agricultural statistics have proved so fallacious in France, on the own-showing of those who computed the figures—so little care was taken to prove their accuracy, many of the items being merely laid at a wild guess—that the government, mistrusting such uncertain data, have preferred to let things have their own course; commercial feeling being, after all, one of the most accurate tests of the real position of a country, as regards stocks of any kind.

The doubt was whether the last harvest was in reality so bountiful as had been surmised. The continually drooping prices on the principal markets of agricultural produce, coupled with the loud complaints of the farmers who sold their corn at a loss, first led the government to declare, in the official *Moniteur*, that there was a possibility of their relaxing the prohibition to export. And, notwithstanding this gleam of hope, prices continuing to fall, we have now heard from Paris that the prohibition is finally raised, and that corn, flour, potatoes, and chestnuts may be exported.

It was, then, evident that the low prices which have led to this measure were not the result of foreign competition; for the limit at which that competition was possible had long been passed. Such a state of things could only result from an extraordinarily abundant harvest, in which case the opening of the ports became not only a matter of sound policy, but also one of sheer necessity. We say of necessity, for there is this peculiarly providential fact connected with the staple food of mankind, that in some measure, like the manna of old, corn cannot be kept sound any lengthened period of time. It is in vain that learned men have lately taxed their ingenuity in finding the means of preserving it from decay in sufficient quantities to form a reserve provision for years of scarcity.

However much we approve of this freedom being at last granted to French agriculture, we must at the same time lament that abnormal state of things which results from the power of a single individual, Emperor though he be, to disturb at his will, and without a single minute's notice, so vast an interest as the corn trade—prohibiting to-day, setting free the next—

thus setting at defiance every known law of justice and fairness, leaving alone common prudence, in matters of commercial interest.

But the worst is, that it is not French commerce alone that may be disturbed by so sudden a revulsion of policy. The English market, from its proximate position and the freedom of its access, as well as its well known dependence upon foreign supply, is the first, if not the only one, likely to be influenced by the measure. The difference between prices in England and in France must now be equalized between the two countries, the only advantage in favour of England being the transit expenses between French ports and her markets. Low as prices are now at Mark-lane, we must make up our minds to see them perhaps a little lower, whilst the French markets will probably rise in a similar ratio, until the level is established.

If prices had been higher in England, so sudden an opening of the French ports would have been severely felt in this country; but although in the present circumstances no very material change can be made in the trade, we are nevertheless confident that sufficient harm will be effected to enable people to appreciate the mischievous tendency of that arbitrary power, apparently wielded with so little fixity by the French Emperor, who three weeks ago prolonged the most stringent prohibition to export, to the end of September, 1858, but who a week later said it was possible he might reverse these laws, and a week later again repeals them altogether.

No doubt the pressure from French agriculturists has been great and influential. Notwithstanding the thraldom of the press, they have been lately pretty freely discussing the hardships which the strange policy of their government had inflicted upon them; and it is somewhat curious and interesting to follow them in their calculation of the cost of producing a bushel of corn, in order to determine the limit when that production is remunerative to the farmer.

We know not how far this vexed problem has been satisfactorily solved in England. Many attempts have been made, no doubt; but we are not aware that any two calculations ever agreed. Of course local circumstances must, more or less, exercise an influence over the farmer's expenses, and anything like a similarity in costs is utterly impossible. Still nothing can be more desirable than accurate *data* which might be easily modified according to local circumstances, for enabling the farmer to form a correct estimate of his expenses in producing his various crops.

In the *Journal d'Agriculture Pratique* of the 20th ult., we read a very interesting communication from a M. Briaune, detailing the various items with which a bushel of corn ought to be debited. Besides the actual primary cost of rent, manure, tillage, and seed, which may be calculated, from the *data* given, at about 28s. 10d. per qr., M. Briaune adds, hail insurance, sundry expenses, personal and furniture tax, road tax, cost of winnowing for market, market expenses, such as conveyance, porterage, town tax, drivers' expenses, horses' expenses, waggon d'light*, &c. He accounts also for the mortality in herds and flocks, in fact, for every burthen and expense, as well as all accidents and risks to which a farmer is liable. The result of all these calculations is, that in the part of France where he lives, in the Department of Indre, the cost of producing a quarter of corn is about 41s. 6d.

Another agriculturist, more sanguine it is true, seems to have taken a much more cheering impression of the crisis. With the view of justifying the Government for the step they had taken of extending the prohibition to the year 1858, this panegyrist had attempted to demonstrate that the prime cost of a quarter of corn was only 23s. He had, however, forgotten to debit his crop with all those incidental expenses and charges which we have just enumerated.

From the remarks of many able agriculturists who have published their calculations, we may safely assume that the average cost of producing a quarter of wheat in France is 42s. It is then natural for the farmers of that country to grumble when they are obliged to sell their corn below that price; and especially when the fall has been so sudden as in this year. The following table will give an idea of the extraordinary oscillation which has taken place in the price of corn in France since the month of January:

PRICE OF WHEAT IN 1857.

	Jan.			Sept.			Difference.		
	£	s.	d.	£	s.	d.	£	s.	d.
Average of the northern districts	2	17	7	2	2	9	0	14	10
Average of the central districts	3	4	6	2	2	6	1	2	0
Average of the southern districts	3	16	6	2	7	0	1	9	6

In examining the various charges made by the French farmers against their wheat crop, we find an item little known in England, viz., a half-year's rent besides 20s. per acre for the cultivation of fallow land. If our neighbours would grow a root crop instead of a barren fallow, they might save that item of expenditure.

We find also that they reckon two hectolitres of wheat for sowing one hectare, which is equivalent to two bushels and one-third per acre. Surely, Messrs. Garrett and Hornsby ought to send some of their corn-drills into that country—a great economy in this item, again, would be the result.

We see further that the average produce of one hectare is only twelve hectolitres of wheat, which is equivalent to something less than two quarters per acre. There must be something amiss in a system which, considering the natural fertility of the French soil and the favourable influences of a beautiful climate, leaves so vast a room for improvement.

One thing is certain, and we may safely deduce it from the facts above—as long as our neighbours can only produce not quite two quarters of wheat per acre, and that at a cost of 42s. per qr., the Emperor may close or open his ports whenever he likes. English farmers need not fear any competition from such a quarter.

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* In France, after sunset all vehicles of whatever description must have lights.

SKETCHES OF BRITISH INDIA.

Under the rule of the Hindoo and Mahomedan princes, the political government of India rested on a basis known as the *Village System.* A certain number of associated villages formed a territorial division called a *pergunnah.* A tract of country equal to a moderate-sized English county was known by the name of a *chuckla;* the union of several *chucklas* formed a *circar;* the incorporation of a certain number of *circars* constituted the grand division known as a *soubah.* All these formed connected parts of one whole, but the entire superstructure reposed on the primitive foundation of the Village, which was the parent institution. When India was thinly populated, families pitched their tents, or erected their dwellings, in close contiguity. They must have done this instinctively, not only for the sake of social intercourse, but the better to protect themselves against the attacks of wild beasts; and they appropriated to their use as much of the surrounding country as their industry could cultivate, and held it not by a parchment deed, but by the right of occupancy. A community of this character, tilling the soil by associated labour, formed a village, and its area was proportioned to the number of families it had to maintain. But it was not simply geographical and agricultural, it was also a municipal corporation—one and indivisible, descending in perpetuity, with all its attributes and qualities unbroken, from generation to generation; and the system had existed from time immemorial, till destroyed in 1793 by the East India Company, though it has since been revived in the north-west provinces, with some slight variations. Its tenacity of political life is remarkable, and in that sense history can point to no other similar institution. Sir Thomas Munro said, "Every village is a little republic, with the *potail* at the head of it, and India is a mass of such republics. The inhabitants during war look to their own potail. They give themselves no trouble about the breaking up, or the division of kingdoms. While the village remains entire, they care not to what power it is transferred. Wherever it goes, the internal management remains unaltered. The potail is still the collector, magistrate, and head farmer." Lord Metcalf bears similar testimony to its durability, in language equally forcible: "The village communities are little republics, having everything they want among themselves, and are almost independent of any foreign relations. They seem to last when nothing else lasts. Dynasty after dynasty tumbles down, revolution succeeds revolution, Hindoo, Patan, Mogul, Mahratta, Sikh, English,—all are masters in turn, but the village communities remain the same. This union of village communities, each one forming a separate State in itself, has, as I conceive, contributed more than any other circumstance to the preservation of the people of India throughout all the revolutions and changes which they have suffered, and it is in a high degree conducive to their happiness and to the enjoyment of a great portion of freedom and independence."

We proceed to describe the details of the village municipal organization. The chief of the community was generally known by the title of *potail,* but in some parts of India he was named *mocuddin.* In the earliest periods to which history or tradition reaches, the office was elective, each cultivator giving his vote; but in the course of time it became hereditary. The potail superintended the affairs and the interest of the village, settled disputes by arbitration, regulated the police, and collected the revenue of his district, out of which he paid the land-tax, which was discharged not by individuals, but by the community, the members of which were responsible to the public treasury, jointly and severally. In the several territorial divisions already enumerated, a financial agent or receiver of the Imperial Government resided, styled a *canongoe.* Take the case of a pergunnah: all the potails of the villages which formed the pergunnah paid their assessment to the canongoe, who was assisted in his duties by a staff of *gomastahs,* or clerks; and the several district canongoes at stated periods paid the tax they had collected to the canongoe-in-chief, who resided in the capital city where the public treasury was established. The cultivators thus avoided many of the vexatious processes common in this country, as they had to settle directly with their potail, who was personally and intimately known to every member of his village, and the aggregate assessment on the village never fluctuated. The second officer in the village municipality was called the *curnum.* He was the accountant, keeping the Dufter or Registration-office, in which he recorded the size and boundaries of the fields, and the names of the families to whom each section belonged. These can be traced back to a very remote period, and the Princes of Rajpootana can show their title-deeds bearing date some fifteen hundred years before the Christian era. Then followed the police of the village, whose duties were to guard the growing, and measure the ripened crops, to attend to tanks and irrigation, to detect offenders, and escort travellers from one village to another. This part of the system resembled the hundreds and wapentakes of our King Alfred, for the municipality were responsible for any crime or misdemeanour committed within their jurisdiction; and if they did not discover and surrender up to justice the offender, they were compelled to compensate the party injured. Criminals rarely escaped, as the police followed them from village to village through the whole of a pergunnah, and further if necessary. Instances of their tact in detecting fugitive wrong-doers are related, of a character almost marvellous, after this order became hereditary, as from boyhood they were trained to thief-catching. If they failed, they were fined; and if proved to have been negligent or guilty of complicity, they lost their heads. In sandy districts there are still a class of police called *puggees,* whose express duty it is to track offenders by their footprints, and their intelligence and dexterity are wonderful. In addition to the functionaries named, the village had its priest and schoolmaster, the musician and the poet, the smith and the carpenter, the doctor and the astrologer, the barber and the dancing girl. When the village expanded into a town, and the town assumed the dimensions of a city, the several trades and callings were formed into guilds ; but the freeholders continued a corporation, managing the municipal revenues, superintending the police, and being the local organ of each district through which the Government business was transacted with the people. The system was simple, just, and admirably adapted to the native population ; and while in all other countries, ancient and modern, civil institutions have been wholly subverted or greatly modified, those of Hindostan remained untouched till 1793, and in the north-west provinces have been revived in later times.

Intimately connected with the landed tenure and village system of India under the rule of the Hindoo and Mahomedan princes was the judicial system, which, indeed, formed an integral part of the former. It was based on courts of arbitration, called *Punchayets.* The punchayet consisted of an assembly of the principal inhabitants of the village or town, varying from five to any given odd number, so as to secure a casting vote. Its members were chosen by the litigant parties in some cases ; in others they were appointed by public authority, being selected on account of their reputation for equity and wisdom. In the primitive settlement of villages, or in those long established in which the population remained scanty, and the state of early simplicity had been unchanged by any innovation, a single punchayet responded to all the wants of the community. In towns or crowded villages, where guilds were incorporated, every trade or craft had its own proper punchayet ; but the duties of all these courts of arbitration, in whatever districts established, were the same, and the mode of discharging them uniform and immutable.

The punchayets decided in three distinct sets of cases. In the first they arbitrated disputes between man and man, in trying civil causes, and investigating criminal causes affecting life and property. Where two villagers disagreed as to the conditions of a bargain, or if one complained of an injury inflicted by the other, the plaintiff and defendant each chose an equal number of arbitrators, and if these could not agree, the *potail* appointed an additional member, empowered to act as umpire. This done, the punchayet was declared to be fully formed, and it at once proceeded to the business of adjudication. The court usually sat under a tree or under the wall of a cottage, when the contending parties stated their case, and tended evidence in its support. The sole object was to ascertain the truth, so that strict justice might be awarded ; hence all quirks and quibbles were disallowed, and no useless forms were allowed to confuse the proceedings. The witnesses were examined orally, but never on oath, except in extreme cases ; and sentence was pronounced summarily, from which there was no appeal. It is to be remarked, that there were no fees of court, nor did either the plaintiff or defendant incur the slightest expense. The services of the arbitrators were gratuitous.

The punchayets appointed to try a question of hereditary succession to property, of debt, or of disputed boundary, was very similar in its mode of procedure to that described ; but in these and analogous cases where a large interest was involved, it is doubtful whether the opposing parties were allowed to choose their own arbitrators. The court, however, was composed of the most competent and trustworthy men in the village, well acquainted with laws and usages. It also consisted of an odd number, and its proceedings were open to the public. Each litigant was called upon to state his case, witnesses were examined and deeds investigated, after which the assembly took time to deliberate and then pronounced its decision. The most important testimony in these cases was sought for in the register of the *Curnum,* whose functions were described in a former article. No charge could be imposed on property without his cognizance, as he kept a faithful record of every transaction, and therefore his books were deemed conclusive evidence. It must be observed that in both these forms of punchayet, the plaintiff and defendant, before the court was opened, were obliged to give security that they would submit to the decision awarded. The pecuniary amount was not considered, for two straws might be tendered and were accepted as ample ; the object was a voluntary agreement, and this shows that promises were held sacred in early times.

The third and last form of punchayet decided the most heinous crimes. It differed in many essential respects, both as to its composition and functions, from the two inferior courts which have been described. Sir John Malcolm says :—" Punchayets, upon criminal cases, are called when murder, or some other capital crime, is committed at a distance from the ruling authority, to aid in the investigation, and their opinion upon the guilt or innocence of the accused is transmitted to the Prince, who frequently sends, upon receiving it, his orders for the release or execution of the prisoner. If the crime is committed at the capital, the ruler, if just moderate, refers the case for examination to a punchayet. These courts differ from others in essential particulars. The local manager or collector of revenue usually presides, while the members generally are all district or provincial officers. The prisoner is, however, patiently heard, and he is allowed the aid of any of his family or caste. Indeed, the principal persons of the latter always attend, as it is deemed as much a part of their duty to give assistance to the *state* in punishing delinquents, as it is to protect individuals of the tribe or caste from unjust accusation or oppression." This form of criminal jurisdiction does not appear to belong to the village communities when population had largely increased and great cities had been built ; but it was certainly derived from them, for it is impossible to suppose that crimes of deep dye were left unpunished in early times or that they were never committed.

The punchayets still exist, but they have lost the influence they held over the natives in patriarchal ages, Then they inspired all classes with awe; but that reverence has now passed away even among the lowest orders of society, and they can no longer enforce their decrees. The present law, however, permits litigant parties to call a body of assessors into court, who find the facts of the case, but leave the law to the judge, thus resembling our juries. This process is now rarely resorted to, as it has not been very successful; but it is adopted more frequently in the north-west provinces, where the village system has been restored, than elsewhere. The difficulty is to prevail on respectable natives to attend, who are reluctant. The only classes to be obtained are functionaries in the public offices, but the natives do not like to embroil themselves from the fear of incurring odium and trouble.

The East India Company originally established itself on the shores of Hindostan as a body of trading adventurers, seeking the profits of commerce; but they had no territorial possessions, except the ground on which their factories were erected. In 1765 they became a civil and military power, administering justice and levying taxation. It was in that year that Jaffier Khan, the sovereign of Bengal, and his son who was recognized as the Newab of Bengal, transferred by grant to the Company what is known as the Dewanny authority over the immense provinces of Bengal, Behar, and Orissa, they consenting to accept in lieu of that splendid dominion a fixed annuity for the maintenance of themselves and their household. In the following year the famous Lord Clive took his seat in the Council as Dewan, or collector of the revenue for the Mogul Emperor; and thus was laid the foundation of the supreme rule of the Company, so greatly extended in subsequent years by treaty, conquest, annexation, and forfeiture. But the sceptre thus suddenly acquired was too weighty for their inexperienced hands, and they were compelled to take into their service many of the native functionaries, to collect the revenue and administer justice. At this crisis of Indian history the ancient institutions had fallen into decay and many abuses had crept in, which the feebleness of government was unable either to repress or correct. The nazims or heads of the revenue board exacted what they could from the zemindars and great farmers of the taxes, whom they left at liberty to plunder all below them, reserving to themselves the right of plundering them in return, when they were supposed to have become once more enriched by the plunder of the industrious classes, who in vain sought redress in the corrupted courts of law, where venal magistrates decided suits, not according to evidence, but according to the amount of bribes they received. It was this system of oppression that mainly reconciled the bulk of the inhabitants to British supremacy, for no change of masters could have rendered their unhappy condition more deplorable, and there was a prospect of their wretchedness being mitigated.

The celebrated Warren Hastings was the first Governor-General who attempted to give stability to our new acquisitions, and he had difficulties to encounter almost insuperable in their character. At that early period there were few Europeans who understood the Oriental languages, which want of knowledge was unfavourable to our administrative and commercial policy, which necessarily partook of an experimental character. We were unacquainted with the mechanism of Asiatic finance, and little conversant with the habits and feelings and modes of thinking of the people. We had to depend on native functionaries for the interpretation of technical terms used in the old official documents, and for an explanation of the customary modes of procedure. Thus whatever related to the revenue and its mode of reception was very obscure and confused. Alluding to the uncertainties in which we were involved, Mr. Shore, afterwards Lord Teignmouth, in a minute, dated in 1790, observes that "every man who has been long employed in the management of the revenue of Bengal will, if candid, allow that his opinion on many important points has been often varied, and that the information of one year has been often rendered dubious by the experience of another." In 1784 Parliament interfered, and it was gravely debated whether the subjects of the Crown of England could constitutionally exercise the prerogatives of royalty in a dependency of the Crown. The point was allowed to slumber, and the Imperial Legislature contented itself with directing the Company to inquire into certain complaints which averred that "divers rajahs, zemindars, and other landholders within the British territories in India, had been unjustly deprived of, or compelled to relinquish or abandon their respective lands, or that the rents, tributes, or services had become oppressive." These grievances, if founded upon truth, were to be "effectually redressed, and permanent rules established on principles of moderation and justice, by which their rents and tributes should be demanded and collected in future." The Court of Directors of that day honestly desired to rule in a spirit of justice, not of nepotism; and in proof of this view of their conduct, we may cite a passage in their instruction to Lord Cornwallis, who succeeded Warren Hastings—"That a moderate jumna or assessment, regularly and punctually collected, unites the consideration of our interest with the happiness of the natives more rationally than any imperfect collection of an exaggerated jumna, to be enforced with severity and vexation."

Lord Cornwallis assumed the administration of Indian affairs in September, 1786, and introduced many financial and judicial changes, but they were not so successful as his military operations. His errors must be ascribed to ignorance, to confidence in men as uninformed as himself, to want of judgment, and, above all, to a rooted prejudice in his mind that the ancient institutions of India had been similar to, if not identical with, the principles of European feudalism. Yet nothing could be more fundamentally opposed to each other, for in Hindostan every acre of soil belonged to the cultivators, while in feudal Europe all the land was the property of the Crown. On this mistake Lord Cornwallis acted, and founded the perpetual settlement, which exists to this day, with the view of ever putting an end to uncertainty of tenure. He imagined that the zemindars, who, under the Hindoo and Mahomedan governments, were no more than officers or farmers of revenue, were the ancient hereditary proprietors of the soil; and when

he made them freeholders, he stripped the cultivators of an inheritance which they had derived from time immemorial, and which had been respected by every conqueror who founded a new dynasty. When the zemindars were simple collectors of revenue, they had power to enforce the payment of the land tax; but when they became proprietors, they could only obtain their rents by a dilatory process of law, Lord Cornwallis fearing lest they might oppress the ryots. But if the zemindar failed to pay the tax imposed on him by the perpetual settlement, month by month, he was summarily dispossessed of his estate. In a short time rajahs and zemindars were ruined; all the ancient families were reduced to bankruptcy and evicted. Most of the estates passed into the hands of rich absentees who lived in Calcutta, receiving their rents through agents who had no sympathy with the deserted tenantry. There was no one to lend them a helping hand when the crop failed or their bullocks died, and it may be said without exaggeration that the Red Indian in his wigwam or the Bedouin in his tent is in a state of opulence compared with the squalid destitution of the Bengal ryot.

THE MONEY MARKET AND THE PRESENT PRICE OF CORN.

Any one who has observed the transition in the prices of farming stock and produce during the last forty years can bear testimony to the fluctuations that have been almost as great during a period of profound peace as they had been during that of protracted war. Upon tracing the causes, we shall find that something has operated independently of mere supply and demand. This, doubtless, has been occasioned by the variations in the value of money on the one hand, aided by the operations of middle men and speculators on the other. And as such proceedings, in this year especially, appear to have increased, we hope we may be pardoned adverting to the subject.

In the first place, we believe that the fluctuation in the value of money that has from time to time taken place may be in a very great degree traced to such proceedings. From the year 1800, and up to the year 1819 (during the one-pound note circulation), the large issue of paper is admitted to have depreciated the currency 33½ per cent. Three one-pound notes were only equivalent to two guineas; the latter coin were bought up at 29s. each, for exportation, until almost every guinea, and also every gold coin, had disappeared. Then came the peace, and the bill of Sir Robert Peel also, abolishing the one-pound notes, and adopting a metallic currency, whereby every borrower was obliged to pay one pound in full for every pound he had borrowed, and for which he had actually received only thirteen shillings and eightpence. And although the noted Mr. Cobbett had predicted that no such occurrence could ever happen, this was still carried out; not, however, without bringing ruin upon a very large proportion of the agricultural, manufacturing, and trading community. The shock, though great, was not greater than the panic by which it was attended. Farming stock and produce fell suddenly from 30 to 40 per cent., and manufactured articles even to a greater extent. In fact, trade was paralyzed, and our monetary system apparently overturned. Nor are we even now exempt from similar trials at stated periods, as every one engaged in business well knows. An alteration in the value of money from time to time, though not so apparent, is equal to an alteration in the weights and measures by which values are computed. It will, therefore, only be necessary to draw attention to what is now going on in America, and which within a few years has before taken place in this country—when money became so scarce, that almost every description of paper-money became worthless, and advances could scarcely be obtained upon an article so usually convertible as silver plate.

We have entered thus far into the subject for the purpose only of showing that the prices of commodities and productions do not alone depend upon the quantity at any time on hand. We might have a deficient crop with money abundant, or, what is equivalent as to the result, obtainable at a low rate of interest. At another period we might have a deficient crop with money (in commercial phrase) tight and the rate of interest high. Very different results would however, most likely follow. In the first instance, speculation would be largely entered into, and importation become extensive. In the latter, neither speculation nor importation would follow beyond the actual demand for the time present. The like result would attend the value of produce in years of plenty, though undoubtedly not to the same extent; but still sufficient to influence the prospects of all producers, as sometimes has been the case, to a ruinous extent.

In the present year, it is now quite certain that we have been blessed with a good harvest. An importation will, nevertheless, be required, more especially as the stock of grain on hand had, up to last harvest, become exhausted; which it will be necessary to replace as soon as possible. But the increase in the value of money will greatly operate against this for some time to come, and therefore no immediate importation of grain need be expected. Still the present prices cannot be long maintained. But let not our readers suppose that these fluctuations are dependent upon a greater or less amount of specie in circulation throughout Europe, but rather that they are governed by the amount of capital unemployed being greater at one period than at another; and when consequently a corresponding advance or decline in the amount of interest takes place. Whenever money is plentiful, speculators and producers can afford to give 5 per cent. for its use; but when the scarcity of it in the market causes the rate of interest to advance, it cannot then be taken up and used with advantage. As a consequence all transactions become contracted until money again becomes plentiful upon the market—to undergo similar results as had taken place upon the previous occasion.

The quantity of gold produced in the last 15 years exceeds greatly that obtained in any antecedent period. This large addition to the circulation of the whole world has already so far operated upon values, that all articles of consumption have steadily advanced in price; not that they are actually dearer, but being represented by a larger amount of specie in the aggregate, their relative values have become altered. Admit, by way of exemplification, that 200,000,000 of specie at one period exists, and at another 300,000,000. The productions of the world would at one time be represented by half as much again specie as before; and if this rate of increase should be constantly going on, the prices of all articles of consumption will advance in equal ratio, subject, however, to the usual fluctuations produced by supply and demand, and by other causes operating differently in different places. The withdrawal, however, at any time of negociable issues of paper to a great amount invariably tends to an increased value of money, and the prices of all articles immediately become reduced exactly as they had previously been increased by its abundance.

The present rate of interest will prevent any great transactions in foreign wheat taking place beyond those effected by the barter of manufactures. At the same time, however, transactions in our own produce will become limited, and prices will most likely decline, and continue low so long as this depression exists; but as wheat is an article of great consumption, it will not be affected in proportion to many other articles less necessary to our use.

We have been led to make these remarks, believing that the calculations that have appeared, based upon mere supply and demand, may, under the peculiar circumstances of the present moment, be so far influenced by the state of the Money Market, as to counteract the natural prices that would have ruled had no such interference occurred. The recent proceedings in France, and their effect on the corn trade of this country, will be found to be the subject of another article.

THE CHARDON POTATO.

[Translated from the French of the "Journal d'Agriculture Pratique."]

For some years past a new variety of the potato, extraordinarily productive, has been cultivated on many farms in the environs of Mans. It is known under the name of "the Chardon Potato," because it was obtained by M. Chardon, a farmer at Griez (Sarthe) in 1846, from a sowing made with seeds purchased at Mans, which had been ripened in Saxony.

The Chardon potato is distinguished from the varieties cultivated either in fields or gardens by the following characteristics;

1st. Its tubers are long, and rather flat; its skin is glossy and yellow when cultivated in light and sandy soils, and rough and yellowish brown tinged with red, when grown in argillaceous earth. Its eyes are numerous and deeply sunk in cavities; its flesh is of a clear yellow.

2nd. Its stems are numerous, strong, and furnished with deep green leaves; its flowers are white, washed with rose, and succeed each other without interruption, from the 15th August to the end of September.

This variety is late, and ripens its tubers towards the end of October. Up to this time (1856) the disease which has appeared every year since 1845, and committed such great ravages upon the late potatoes, has not touched it.

But the Chardon potato is not only an interesting variety on account of its having up to this time resisted the attacks of the disease: it deserves to be propagated because it is without contradiction the most productive potato of all those cultivated upon a large scale.

M. Dugrip, to whom attaches the merit of having been the first to direct the attention of agriculturists, committees, and societies, to this fine variety, has produced, on an average per hectare, twenty times the quantity of tubers planted upon the same superficies; this result is so much the more remarkable that it constitutes the mean return of the culture of 7 hectares 40 ares (about 17 acres 1 rood 9 perches).

In cultures conducted on a smaller scale the returns obtained have frequently been extraordinary. Thus M. Coudray, a farmer in Saint Maixant (Sarthe), has produced from eight hectolitres 220 hectolitres, or more than 27 to 1; M. Epinette, a proprietor at Ferté, Bernard, gathered 33 hectolitres for one; and M. Velmorin has 18 hectolitres for 20 litres, which is more than 90 times the quantity planted. In general the weight of the tubers averages between 150 and 225 grammes (from 4.8 oz. to 7.2 oz.). This potato will propagate itself very rapidly in France, if it continues to be so productive and remains perfectly healthy; for a great number of agricultural committees and societies have experimented upon it this year (1856), and we strongly recommend the readers of the *Journal d'Agriculture Pratique* to follow this year its divers phases of existence in these attempts, and to take an account of the products they render in the autumn. We wish to believe that it will still furnish an abundant, if not an extraordinary produce, and that we shall be able anew to regard it as a true conquest, a unique variety, as well on account of the beauty of its tubers as of the large proportion of starch they contain.

Gustave Henze.

THE LONDON, OR CENTRAL FARMERS' CLUB.

THAT THE IMPROVED EDUCATION OF THE LABOURER IS ESSENTIAL TO THE PRESENT POSITION OF THE FARMER.

The first winter-meeting of the Club was held on Monday, November 2, at the Club-house, Bridge-street, Blackfriars. Mr. Owen Wallis, as chairman for the year, presided, supported by, amongst others, Mr. J. Pain (Beds), Mr. Beale Browne, Mr. Trethewy, Mr. H. H. Tatam, Mr. W. Gray, Mr. J. Wood (Ockley), Mr. T. Owen (Berks), Mr. J. B. Spearing, Mr. Gibbens (Bucks), Mr. Brickwell (Oxon), Mr. T. Congreve, Mr. Spencer Skelton, Mr. W. Cheffins, Mr. Thomas (Lidlington), Mr. Thomas (Bletsoe), Mr. Bullock Webster, Mr. Cressingham, Mr. Wood (Croydon Club), Mr. L. A. Coussmaker, Mr. G. P. Tuxford, Mr. Sidney, Mr. J. N. Lee, Mr. Morton, Mr. Eve, Mr. Ambrose, Mr. Copeland, &c., &c.

The Rev. CHARLES THOMAS JAMES, M.A., was appointed to introduce the subject for discussion, which stood in the following terms:—"That the improved education of the labourer is essential to the present position of the farmer."

The CHAIRMAN, in opening the proceedings, said he had great pleasure in meeting them again in that room, after what might be considered their long vacation; and he was glad to find that the attendance included some of the oldest and most influential members of the club. The subject for discussion that evening was, he was sure they would all agree with him, one of very great interest and importance. The steam-engine and improved machinery were every day more and more superseding manual labour, and it was indispensable that they should have more intelligence and more skilled labour at command, to direct their engines and machines; and, without more extended education, it was impossible that this could be the case. The question was not altogether unbeset with difficulties; but he hoped that Mr. James, whom he had now great pleasure in introducing, would be able to show them that those difficulties were by no means insurmountable (Hear, hear).

The Rev. C. T. JAMES then proceeded as follows: The three first men that ever lived, were a gardener, a ploughman, and a grazier—significantly expressive of how dear unto mankind should be all in any way connected with the soil. The principles on which the remarks which it is my privilege and duty to submit to you this evening are founded, are a decided acknowledgment of the scriptural declaration, "That the soul be without knowledge it is not good"—that we have no right to fetter or imprison in perpetual darkness the faculties of our fellow-creatures, and thereby impeach that wise and beneficent Being, who, without respect of persons, bestows the rich blessings of Intellect and Reason with equal liberality upon all the children of men; and that it is not simply a wrong to our fellow-men if that is withheld which they may justly claim—it is a sin and degradation to our rulers. I affirm that no one can be in the right, who has not fixed religious principles, and an earnest faith in those principles, that the great powers of intellectual and industrial arts have now no exclusion of name or station—

> "Honour and fame from no condition rise:
> Act well your part; 'tis there true honour lies"—

that the wondrous powers (the tools) of our time, viz., steam and steam-ships, printing, money, and popular education, belong to all those who can handle them; for now intellect and industry wear the crown, and the road that grandeur levels for his coach, toil can travel in his cart. I maintain that he is a traitor to his country, who does not strive to do his best to call out the resources, the good qualities, and the enduring happiness and security of the British empire—that (though it may not have been so intended) there has hitherto been too much in the way of class interests, too much of a monopoly in what concerns the human mind, and the education in things suited to their station, of the masses of the people, —that those studies and pursuits which contribute so much to the intelligence, to the refinement, to the enjoyment, to the elevation of the human mind, should no longer be considered as the peculiar property of the more wealthy parties, but should be brought home to the doors of all our workmen, and the hearths of all our cottages; and that additional means and facilities should be given for that instruction, that complete moral education of the whole character and the whole man, which shall qualify them to be good Christians, loyal subjects, skilful honest labourers and servants, and useful citizens. I maintain that incompetence, stupidity, imbecility, idleness, and ignorance can no longer be allowed to usurp the places of skill, of genius, of vigour, of industry, and of knowledge—that, if we wish our work-people to act well for us, we must prove ourselves their true friends by sympathy in their position, by an interest in their welfare, and thus plainly and practically acknowledge and show their claim upon us. I maintain that the effectual way to better the condition of the people is to better the people themselves, fitting them for the attainment of higher enjoyments; that an ignorant and uncared-for population is, and must be, an unhappy and a vicious people; and that if we will not bestir ourselves for the intellectual and moral benefit of our fellow-creatures, we must be content to be taxed ten-fold more for the punishment of their crimes; and as to our criminals, I affirm that if the State permits children to be reared in vice, it cannot expect virtue from the adult; nor is it, if it refuses to educate properly, entitled to take advantage of its own wrong, and erect a gallows. No; I maintain that the ignorant child is, and must, be the vicious child; that the educated man is the safest and best in every rank and profession; that one handy, skilful, well-educated workman is, at the present day, worth a dozen who are not so, and has more than as many times their chances of advancement. My subject then concerns the rights, difficulties, dignity, and consolations of labour; it exhibits property, acknowledging, as in the old days of faith, that labour is his twin-brother, and that the essence of all tenure is the performance of duty: it attests that property and position have duties as well as rights; that the rich want, not merely hearts of feeling, but of sympathy—the poor want human culture; that our people want, not charity, but a judicious education and employment—not alms, but humanity; and that if the rich have duties to discharge, it is because the poor have rights to be protected: it attests that no country can be prosperous or secure in its wealth, unless its working-classes be industrious, virtuous, provident, happy, decent, and contented; that character and labour are the poor man's capital, and therefore must be rigidly and jealously preserved: it attests the awful contrasts between English luxury and English poverty; bids us endeavour to mitigate this wretched disparity of condition, which abused, renders the rich luxurious and effeminate, the poor heartless and hopeless; makes hope kindle into impatience, and impatience madden into despair; and bids us labour to spread throughout this land of awful contrasts those great and manifold blessings, of which Faith is the mother, Religion is the handmaid, and Charity the fulfilment; and strive, in this age of competitive rivalry, for a revival of that sympathy and reciprocal discharge of duty as of yore, when

> "Merry went the mill-click, the shuttle, and the plow,
> And honest men could live by the sweat of their brow."

I come now to the "position" of the British farmer; and I maintain that it is a high and dignified one, fraught with immense responsibility, both by precept and example, influencing for good or evil 800,000 families of labourers in husbandry, forming the interest that wields the power, originates the wealth, cherishes the manly freedom, and promotes the happiness of the entire people; and that it is from this interest that the greatest part of the public burdens are borne, and from which the State derives the greatest portion of her subsistence. As to "the holdings" of the British farmer, there are, it is calculated, 78 millions of acres, at a rental of 127 million pounds sterling per annum, in the area of these kingdoms; 14 millions of which are unimprovable waste, and 12½ millions uncultivated, but improveable land. The farms occupy two-thirds of the land of England. The number of farms is 225,318; the average size is 111 acres. Two-thirds of the farms are under this size; but there are 771 of above 1,000 acres, the large farms abounding in the south-eastern and eastern counties, the small farms in the north. There are 2,000 English farmers, holding nearly 2,000,000 acres, and there are 97,000 English farmers not holding more. There are 40,650 farmers who employ five labourers each, 16,501 have ten or more, and together employ 311,707 labourers; 170 farmers have above 60 labourers each, and employ together 17,000. What an enormous trust held by such a body of men, over such a multitude of workmen! And are they alive to their position? Do they know their duties—and, knowing them, dare to perform them? I answer unhesitatingly, for the most part, Yes; and desire to promote and advance the physical, moral, and intellectual training of the labouring classes. True there was a time when, in some parishes and districts of our country, the education of the labouring classes was viewed with distrust, and encountered opposition; but men now begin more fully to appreciate the words of the excellent Dean of Hereford, in his "Suggestive Hints on Secular Education." "The farmers," says the Dean, "and those of the same class in our rural districts, may rest assured that, until they get that education it is desirable they should have, and until they feel that interest in the labourer which is right, they only augment the evil which they dread. The one is advancing in intelligence; the other is standing still: and I cannot but think that, in a very few years, the employers of labour will be the class which, of all others, will take the greatest interest in those very schools of which they now think so little." And verily it is high time that it should be so—that "Progress!" should be their watchword, and "Upwards and onwards" in all judicious improvements and practices their maxim and pursuit. Circumstances have, especially during the last four years, brought the owners and occupiers of the soil to a stage in the march of progress which must compel them to take a new view, and to follow an improved system of things; to cultivate the independence of their labourers concurrently with their own, giving them an interest in the soil and its produce, according to the amount and quality of the labour they annually expend. It is an undeniable fact that agricultural labour is in many districts becoming scarcer; that the tide of labour which once came pouring over the harvest-plains of England, has of late years flowed into other channels; that the fertile settlements of America, and the discovery of the gold-fields of California and Australia, have offered temptations to our labouring classes to emigrate to regions where, too often, their hopes alone have been golden. The ever-increasing production of our industry, too, is constantly drawing to the manufacturing districts thousands of labourers, who are tempted thither by what they conceive to be lighter labour and more remunerative wages. The critical state, moreover, of our Eastern territories in India, must have its effect, for a long time, in taking from the plough a number of the hardy sons of labour; whilst in England, with our uncertain climate, and often what is called a "catching harvest," every effort is necessary to find efficient substitutes and means of making the most of a sunny day, and, by the rapidity of means employed, to secure those crops which are the reward of industry from the chances of an unpropitious climate. Yes, I say that the more artificial position of agriculture, arising from the progress made in machinery, chemistry, and mechanism; the extended use of complicated machinery and scientific appliances to farm-work; the wondrous power of steam, which has effected an almost incredible revolution in the pre-existing modes of life, beneficial to the producer of food no less than to the consumer—whose utility in application consists in the addition which it makes to human power, its economy of human time, its conversion of substances almost worthless in themselves, into articles of great value and nourishing food for cattle, as also in the increased command which it gives society over the necessaries and comforts of life—I say that the forces derived from wind, water, and steam are so many vast additions to human power; and M. Dupin has calculated that the amount of inanimate force thus obtained is equivalent, in Great Britain alone, to an addition of twenty million of labourers. Again, the enormous demand made upon our limited soil for the people's food, and our bounden duty to supply that food at the cheapest possible cost to the utmost possible extent—the advantage which in a few exceptional cases is sure to be taken of the present level of high prices in letting and renting farms—the unsettled state and ever-doubtful position of the corn-supplying countries on the shores of the Baltic and Black Seas—the bondage of antiquated statutes, which in many cases still cripple the agricultural resources of the country, forbidding just and ample security for capital invested in the land through the non-acknowledgment of tenant-right (cheers), and impeding it in supplying its own wants—the duty to ourselves, and to the community who rely on us for food, to cheapen produce, to increase its quantity, to improve the tillage of the soil, and to look to advancing knowledge to aid us in developing to the utmost the latent powers of those fields which we have now in hand—the artificial modes of stall-feeding, and the richer food supplied to cattle, rendering the health of our stock far more precarious, and attention to the economy of manures and sanitary measures far more absolutely essential—the race which is now being run between mechanical ingenuity and manual industry, the one not puffing and panting to supplant and destroy the other, but being its most valued helpmate and ally—all these things, I say, make it now absolutely essential to the farmer to have skilled and clever workmen for skilled labour, sharp-thinking and intelligent men for modern appliances and pursuits; or else he must be content to leave it to better men to avail themselves of all the modern improvements in farming, and struggle against a competition from which activity, skill, and enterprise can alone expect to reap advantage. And this brings me to the next point, viz.:—What mean we by education, which my thesis declares needs improvement; in what that improvement must consist to be worthy the name, or suited to the present wants of the community. And in this respect the heathen nations put us to shame. In Persia, so great was the attention paid to education, that everything appertaining to youth—even to their food, exercise, and punishment—was made the subject of express laws. At Athens, the education of the young was conducted according to uniform regulations. In Sparta the greatest anxiety was shown to train the young in the love of virtue and of country; and in their code of morals was included—"To ride the horse;" "To string the bow; "To speak the truth." The Romans were careful to educate according to certain rules. And now with regard to ourselves: as the invention of printing and the power of steam have dispelled the mist of general ignorance, as learn something our people will, and as we acknowledge that there is neither hope nor strength nor comfort to a nation, but in "a virtuous, a wise, and an understanding people," let us take care that the advantages which we have had be not used to oppress our fellow-creatures, or the light which has been given us to darken the creation of our God. Let me, though, not be misunderstood; I acknowledge, to the fullest extent possible, that education does not prevent crime. The forger, the swindler, the fraudulent banker, the concoctor of bubble companies, the embezzler of other people's moneys, and the man of intense selfishness and ungovernable passions, are not uneducated; but these grievous blots on the Christian character are the abuse of education and not its use, and we are not to argue against a principle because it may be abused (Hear, hear). When such flaws appear in the character and conduct of any of the working-classes, who may have had in early life some smattering of instruction, but whom we subsequently permit and compel to huddle together in wretched, filthy dwellings, in such a way that decency, morality, and religion cannot but be extinguished; then, I say, we pervert logic and lay the blame on the education they have received, forgetting, that omissions of our duty and commissions of neglect have made good moral conduct to be almost impossible. When bad passions are thus naturally engendered, and discontent and disaffection stalk abroad, we are alarmed and stand aghast, forgetting that this is not because poverty is always seditious, but because justice is retributive and wealth too frequently oppressive. It is now pretty generally acknowledged that general education for the working classes is a good thing, and that, if it were not, the pressure of the times is so great, the peculiar position of the labour market so restless and uncertain, and the wonderful improvements in every department of machinery, science, and art so vast, as to make education an absolute necessary of life; and I maintain that on the judicious education of the people, more than any other human means, hangs the destiny of this country. Practically, the question whether education is or is not a good thing in itself, is for ever settled; and all we have to think about is, in what manner and to what extent the working classes shall be taught, for taught they must and will be. I have no unworthy fears about the powers of man's mind being called out and strengthened so that he can apply his knowledge to the business of life; and I hold it unworthy of Christianity to suppose that there can be any opposition whatever between the fullest development of those faculties with which Almighty God has furnished man, and that Christian faith and duty which are to train those faculties for their highest ends, and remind us at the same time of the wants and necessities of the producers in society, and that, after all, man is greater than his works, and the workman superior to his fabric. It is lamentable indeed, that whilst England stood first among the nations in commercial greatness and in military and naval powers, and whilst she had advanced more in the arts and sciences during the last 20 years than any other portion of the globe, the working-class education was in a more discreditable position than that of any other civilized country. It ought to call a blush of shame to our cheeks to know that 40 out of every 100 persons in this community were either totally unable to read or write, or possessed only so little of those elementary acquirements, that it was of no practical use. In those European countries, on the other hand, which were usually considered the seats of despotism, and also amongst the Anglo-Saxons across the Atlantic, a man so ignorant would be positively an object of wonder. Yes, I say, give the labouring classes a judicious, useful education, that the peculiar glory of England in the coming generation may be a social, an intellectual, and a moral glory; and I would adopt the language of a brother in the ministry, who though unknown to me I highly esteem for his noble sentiments in reference to the labouring classes—I mean the Rev. E. F. Beynon, the president of the East Surrey Agricultural Association, who, in addressing the members, said, "Let us give to the youthful poor a sound education, for by so doing we confer a benefit on the country at large; and while advancing the welfare of the children of the cottage, we consult for the safety, benefit, and happiness of the children of the castle and the palace. Let us hear no more of the delusion, that knowledge can unfit the labourer for his duties. Would a man be disposed to take less care of cattle, because he knew something of their nature and physical constitution? Would he be less capable of managing machinery, because he knew somewhat of mechanical laws? or be less satisfied with his wages, because he had acquired a knowledge of the law—that of supply and demand—by which those wages are in no small degree regulated? Would his labour, in fine, be of less value because it was skilled labour? No, indeed. Let us then give our labourers more intellectual and more religious light, more education, and more of the knowledge of common, or, I would say, more properly called useful things. Let us not rest satisfied with providing for the bodily wants of our work-people: let us seek to cultivate them also, in head and heart. Let us give our labourers such an education as may fit them alike to cope with life's trials, and to perform life's tasks." One great evil has been, that the idea of education has been associated only with infancy and youth, exhibiting in our schools a few youths as literary prodigies, often unfitted for the duties of life, and a blot on the name of education. Education, I maintain, does not consist in the mere storing of the mind with a mass of dry facts, just as you would fill a box with a number of curious articles; but in developing the spiritual part of a child, and imparting to his mind the power of drawing sound conclusions, and gaining knowledge for himself in after-life. It is youthful discipline, and the formation of industrious habits, with a cultivation of truthfulness and honesty, as well as punctuality, neatness, and order. It is not only teaching them, but *training* them—first, in the knowledge and love of the Saviour; secondly, by the formation of their moral habits; thirdly, by improving their powers of mind; and, lastly, by giving them secular information. What we want, I say, is, not only to educate, but to train; we want the education of life, the education of responsibility—the cultivation of man's humanity; the recognition, as a part of our national life, that the God of Revelation must be identified with the God of Nature. It is in this way alone that we may hope that our people will become honest, upright men, good and useful labourers and servants, faithful and religious Christians, and live before God the witnesses of His truth, the monuments of His grace, and heirs of His future and everlasting mercies. This is the seed, I say, which in all our transactions with our fellow-creatures we must sow broadcast over the land, and inculcate in our schools, as being alone able to give government its sanction, laws their authority, order its security, or education its power. Let the alarm and distress now being felt in the United States from the neglect of this, in the rapid growth of scepticism and spiritual indifference among a people once distinguished by the depth and energy of their religious character, convince us of the danger of allowing the rising generation to grow up with mere highly-cultivated intellects, but without any definite religious principles. And let another instrument of our disasters—in the godless schools and infidel press of India, with all the horrors and all the woe of which we have heard—confirm the solemn warning that we must not arm with mere intellectual powers, if left destitute of holy principle. As to schools, in the high-toned and manly ones of Eton, Harrow, Rugby, and Westminster, within the reach of the affluent and wealthy alone, a good education to fit them for any duties of life, however elevated, can most happily be secured. One great reason why so many men illustrious both in Church and State issue from these noble institutions is, that in their play-grounds courage is universally admired, meanness despised, manly feelings and generous conduct are encouraged. But I grieve to say that though much improvement has taken, and is taking, place—and the public voice demands it—our middle-class schools (from the grammar-schools downwards, in which the sons of many of our farmers would naturally seek their education) are a crying disgrace to the country, chiefly owing to incompetence and unfitness on the part of the masters, and indifference on the part of the parents. It is a lamentable fact that, of the sons of persons in high social position, out of 860 candidates for the civil service rejected on account of imperfect education, only 65 have been refused for deficiencies *not* involving spelling or arithmetic, or both; whilst of 437 candidates examined for commissions in the Indian army, 234 failed in common arithmetic, and 182 in spelling their mother-tongue! What a picture of the state of middle-class education even in its higher forms! Happily, in national and other schools appropriated to the labouring classes, a foundation is laid by which a good and serviceable education may henceforth be obtained. True, in some districts and parishes these schools have not received the support of the farmers and others who are above the labouring class, and who have doubted whether the present high training for schoolmasters is that which is best suited for the practical duties of life, or for the education of children of such tender years as at present fill our schools; and they have considered that, by giving their aid to these National and British Schools, they are assisting to give the children of the labouring classes a better education than they can obtain for their own; but, in the words of one bearing the honoured name of Acland, I would say, "As 15,000,000 out of the 18,000,000 inhabitants of England are dependent on incomes under £100 a-year, five-sixths of the population of England are, and must be, deeply interested in having a good and cheap education within a walk of their own doors; and where the means of the farmer are limited, in those districts of our land where no good middle-schools exist, or where the best schools are, under a well-trained master, the national village-school, I would urge him to let his sons reap the advantages, and consider more the benefits so easily within his reach, and his duty to his children, more than his own dignity." But whatever the qualifications of our teachers, or however efficient the arrangement of our schools, we shall never effect permanent substantial good in our rural parishes without the co-operation of the employers of labour; for the moral and social condition of the working classes is intimately associated with the labour-market, and rests far more with employers than with schoolmasters. There are, I believe, about 29,000,000 of inhabitants in the United Kingdom, and the population is increasing at the rate of about 1,000 a-day. The number of children between the ages of 8 and 15 years is estimated at 4,908,696, and of this number only 2,046,848 attend school at all, whilst 2,861,848 receive no instruction whatever; but of upwards of 2,000,000 of scholars, more than one million and a-half remain only two years at school; and out of the 2,000,000 of children attending school, only about 600,000 are above the age of 9. To show the utter indifference of a vast number of parents as to the mental and moral culture of their offspring, I may mention that, out of 4,663,262 children, there are 1,806,097 who are neither sent to school nor to labour—namely, 835,469 males and 970,628 females. Let any one imagine what a moral pestilence must be generated from such a mass of unemployed and uneducated boys and girls. And why, I ask, is such a deadly blight permitted in this our land? Why is it not made a basis of legislation, that every child born in this kingdom shall be taken care of, and taught; and that, if neglected by its natural guardians, its parents, as under the Reformatory Bill, the persons and properties of those parents shall be amenable for their neglect? Why not extend the scope of the "Factory Act," making its operations general instead of partial, national instead of local? If when these children are convicted of crime the parents' rights are interfered with, why should not the same principle be applied to those vagrant and neglected children who are growing up in ignorance and immorality, which must, in the end, lead to a violation of the law? And, if it were laid down as a principle that every child has a right to be instructed and taught in useful branches of education, as, under the Poor Law, it is entitled to be fed—that children have as much right to their education as to their subsistence—the most effective death-blow would thereby be given to the immorality which deforms our land, and many of the difficulties in education, which are now considered formidable, would disappear. I am well aware of, and have often had occasion to grieve over, the ignorance and obstinacy of some parents, the selfish and sordid feelings of others, in refusing to send their children regularly and properly to school; whilst, in some cases, there is a want of proper authority on the part of the parents, and of obedience on the part of their children. We want a new race of parents, and a well-educated community. I have also often grieved at the poverty of many families among the working classes, which has acted as a barrier against the education of their children. I maintain, however, that non-attendance at school among so vast a number of the children of the working classes cannot be ascribed entirely to poverty, when the sum of more than thirty-six millions sterling is annually spent by that class upon intoxicating liquors; and the gin drunk in England alone amounts to twenty millions per annum, which would pay the poor-rates three times over. We must not, however, lay all the blame upon the parents or the children; I affirm that we have been guilty of great neglect in allowing the education given in many of our schools to be so grievously defective, and so little suited to fit the children for the active duties of after-life. The quality of what has been taught has, in many cases, not been deemed of sufficient money-worth to the parent or employer to justify the continuance of the child at school; whilst in other cases (for the labouring classes generally are uncommonly quick and shrewd in discerning where a really useful kind of education has been established), parents, convinced of the sound and valuable character of the system of instruction, have been known to make great sacrifices to enable their children to acquire profitable knowledge. The drawback to excellence in many schools (especially in rural districts) arises from the almost infantine age of the scholars; and this we must expect will continue. Perhaps also we have not sufficiently consulted the feelings and wishes of the parents as to their children's future prospects and walk in life; the farmers have not sufficiently advised—aye, and required—that the children of men in their employ be sent and kept to school. I maintain that it is, and ought to be, a part of school-training to make the children useful to their parents and employers (for the farmers want the children's labour, and they must have it) at as early an age as possible; so that the hen having scratched for the chicken, the chicken may in turn scratch for the hen: in other words, children may aid their parents to subsist with a greater degree of comfort, and obtain for them more of the conveniences and necessaries of life. As the condition of the labouring classes is one of much trial, of much and enduring privation; as the amount of remuneration they receive renders it necessary for the parents to eke out the family fund by bringing into requisition the labour of their children, especially with the high prices of every article which have prevailed of late; dependent as they are on health for ability to work, and mere weekly wages for their maintenance, it is unreasonable to expect or suppose that an addition of eighteen-pence or two shillings earned weekly by a child can easily be spared from the poor man's housekeeping. Let us, then, I say, receive the children into our schools at as early an age as possible; the very discipline of mere attendance being the first step in breaking up the fallow-ground for the seed we afterwards want to sow. Let us blend amusement with instruction: let us provide recreation in leisure hours; let the introduction of field sports or garden employment be adopted, it having been found that by such means the child's mind is relieved and enlivened, and that he applies with greater energy to his mental work when his bodily powers have been invigorated by labour. Let us strive to turn out from our schools, if not universally skilled workmen, at least some handy lads, fit to go into farm service, and imbued with beneficial influences at that critical period when the character is receiving its first bias for good or evil. Let us be stimulated to action by the words of one of our greatest engineering commanders, who on his return from the Crimea, in speaking of our glorious soldiers, recruited from our manufacturing and rural districts—magnificent in bravery, yet helpless in camp service—used these words: "Few could handle a spade or mattock decently, fewer still an axe, a saw, a hammer, a trowel; few could mend their own clothes, fewer still their shoes; very few could cook their own victuals." And he added: "This sort of helplessness in our soldiers arises from a similar helplessness of the classes of our population which furnish the recruits, and shows the inefficiency of their training." If the children are not to remain in attendance at school after the age of ten or twelve, I maintain that with our improved system of education, that school is little worthy of its name if the child has not learned much of the rudiments of education and something beneficial for the duties of life. Let there be, in addition to the ordinary tuition, works of industry and manual skill united—seeing that what were once considered complicated machines as applied to agriculture are now common things. the reaping machine an acknowledged fact—and boys who can turn their hands to rectifying or mending, or even using them skilfully, are sure to get on; as any lad who was taught turnip hoeing as practised on the Duke of Bedford's estate at Woburn would always obtain extra wages, and be eagerly sought for by the farmer in the district at an advanced sum, so, I say, let such work as I have mentioned henceforth form part of our intellectual and industrial training. Let our poor children be educated as far as possible in those branches of knowledge and trade which bear on that specific kind of labour or skill which in their locality is required. Let us remember that, though the mind of the child may be quickened at school, the character of the lad or man is formed at home, and that we must create a taste for home duties and domestic occupations which industrial works ever generate and produce. Let habits of industry, prudence, economy, truthfulness, and honesty be inculcated; and let children be qualified by manual exercise for the manual employments by which they are afterwards to live. It is thus that we may enlist the sympathies of the parents—aye, and of the employers too, by the useful, practical, and remunerative tendency of education; and induce both to strive for the longer continuance of the children at school, on account of the beneficial elements which it contains. In the conference recently holden in this metropolis respecting the education of the working classes, and so ably presided over by his Royal Highness the Prince Consort, whose masterly intelligence and christian sentiments will cause his name ever to be remembered with lively gratitude in the history of his adopted country, the principle of the half-time scheme, by which education and work may be arranged on alternate days, or parts of days, was largely recommended by many friends of the cause. But I maintain that, however applicable and advisable such a scheme may be in the manufacturing districts of our land, it is inapplicable and impracticable amongst the labouring classes on the farm; and that the chief and most effectual substitute in our rural districts is the establishment of evening schools, in which, during the autumn, winter, and early spring (for it is not possible to do much for seven months in the year), both amusement and instruction may be imparted. This may be seen in operation in the admirable evening-schools established by his Royal Highness the Prince Consort in Windsor Park, where workmen of all ages congregate, and periodically receive at the hands of their royal master the valued prizes for efficiency, regularity, punctuality, and diligence, which are so judiciously selected. It is such an act of justice, kindness, and parochial efficiency which is needed in all our parishes from the owner and occupier of the soil. It is what our labourers deserve; and although we must not deceive ourselves by supposing that the end we desire can be achieved without some real sacrifice, yet, with an honest aim and wish really to benefit our fellow-creatures, I think the balance between the established system of labour and education can be adjusted with a due regard to the claims of the one and the urgent need for the other. But much, much more must be attended to, and an interest and a sympathy exhibited in and for the moral welfare of our lads after they leave our schools; and for this we want a kind heart, a strong will, a healthy not fastidious taste, and, above all, singleness of purpose. Let us consider that dangerous age when our lads think themselves their own masters and beyond control; when they leave the roof of their parents, or first employers, and sauntering forth perhaps to a statute fair (which is, I maintain, the labourer's curse), let themselves out for a mere twelvemonth to any master who may engage them; at the expiration of that time setting off again to meet with another master, a new home, and new companions, hardened perhaps in crime and villany, considering themselves mere migratory beings, with now little or no religious character, no sense of Sabbath duties or Sabbath observance, and nondescript in feelings, habits, and views, instead of the upright, handy, diligent, skilful, trustworthy servants of which we talk, but take so little pains to produce. All this well deserves our attention. Happy would it be if masters and mistresses would conscientiously discharge that which is their bounden duty, by exhibiting a lively interest in the character and condition of all those in their employ, and so arrange their time and business that every member could attend the public service of the sanctuary, remembering that—

"A Sunday well spent
Brings a week of content,
And health for the toils of to-morrow;
But a Sabbath profaned,
Whatsoever be gained,
Is a certain forerunner of sorrow."

And what an effectual check to the demoralization in our parishes would it be, if the admirable plan of boarding, lodging, and maintaining yearly servants on the farm where they are employed, as so lucidly expounded in this room by our valued member, Mr. Marshall, of Riseholme, Lincolnshire, were more generally extended! Nor will our training or influence be complete, unless and until we introduce and adopt amongst the sons of toil in our parishes, hardy, manly games, and out-door amusements and pursuits, calling into exercise almost every muscle of the body, cultivating quickness of eye, dexterity of hand, and powers of endurance in the whole frame. Yes, I say, let us promote all games of skill, and discourage all games of chance—not thinking it beneath our notice or our station to join heartily with our people in their innocent manly recreations, and thus prove that public concourse does not necessarily mean public revelry, nor games necessarily imply idleness. But however defective may be the condition of our lads, that of our female population is, I grieve to say, unhappily, far worse. Many of the serving-maids of the present day go to perdition through the foolishness of their educators. They have no knowledge of housekeeping or of the duties of maternity, and are alike unfit to make good wives as good servants. They have a dangerous and ensnaring love of dress and outward show; they can eagerly devour wretched literary trash, while they are unable, perhaps, to mend their own clothes, incapable of plain needle-work, cottage economy, and cooking. It is to this extreme ignorance of domestic management on the part of many wives that much of the misery and want of comfort in many families is to be traced; and numerous instances might be mentioned of the confirmed drunkard and beer-house frequenter attributing his habits of dissipation to a wretched home. Here, again, however, the females are more to be pitied than to be blamed, as the fault lies with those who have taken no pains in early life to instruct them in domestic duties, or to make them better members of society. I particularly recommend for our adoption what has been found eminently useful, viz., an arrangement in every parish for receiving in rotation the elder girls of the school into the house on the Saturday, or some day in the week, and letting the kitchen, laundry, and each department of the household work be the schooling for service in this the much-needed School of Industry. This may be seen in operation in the admirable school established by the illustrious Sovereign of these realms, in Windsor Park, where the females are instructed in the arts of domestic economy, and taught and required to perform every description of household work under a most efficient mistress. Then, as to the abodes of the working-classes, how much do they injure themselves, and how much have they to answer for, who compel their labourers to undergo such physical exhaustion, and to journey such distances to and from their work, instead of delighting to give them a decent cottage with an adequate garden, and every comfort, upon the farm where the labour is expended, so that they might be able to indulge those instincts of decency, cleanliness, order, tidiness, comfort, and economy, which are the natural characteristics of the British people! And what a national disgrace is it, that we should witness in some districts of our country efforts to prevent the erection of dwellings for the wants of the local population, and the demolition and decay of others at present existing, in order to escape their just liability, and shift it from their own district to others! Again, I say, it is a national disgrace to see so many of our people compelled to occupy tenements or habitations (sometimes at an enormous rental) in which there is no possibility of the classification of the sexes, or conveniences for the common decencies of life, causing sickness and disease to the living, and sending new-born generations to an early grave. Every person requires a supply of ten cubic feet of air a minute—that is, a quantity twice the bulk of his own body; and how can this be obtained in many of the existing dwellings of our labourers? Without a decent and well-ordered home, the best education will be ineffectual to prevent physical suffering, filthy and vicious habits, improvidence, lawlessness, recklessness, intemperance, and crime among our working-classes—such evils proving one of the greatest drains upon the country's energies and power. I call upon all owners of property, in the name of civilization, humanity, and public decency, to put an end to scenes which are a scandal and a reproach to the community; and would remind them, that no property can be held securely for private gain at the cost of such a national and public wrong. This is what I mean by an improved education for the labourer, and what is due, to and from the present position of the British farmer. And if the sentiments which I have advanced are in unison with your own; if you believe that good instruction is useless without good education, but that good education is impossible without good instruction; if you feel that the immortal, because the moral glories of the British empire, are worth preserving; if you feel convinced that judicious education and knowledge are now the best means of expanding our industry, promoting our own benefit, preserving our freedom, and consolidating our power; if you deem that he is a shallow and presumptuous man who would attempt or affect to undervalue the intelligence of the working classes, and that he has learned but little of his duty to his country, who feels no interest in the moral welfare, or the leisure hours, amusements, and enjoyments of his fellow-men, if you value, and would receive from those in your employ, a respect without restraint, and an affection without blindness; if you feel assured that there are many hearts to be won, many minds to be instructed, and many souls to be saved—that the time is short, that early years are of incalculable value, and every day neglected adds but to the ranks of viciousness, of misery, and of crime; if you believe and hold all this, then deem it both your privilege and your duty to aid in the temporal and spiritual advancement of the working classes, no less than in your own. Be up and doing; gauge sorrow, and take the depths of human misery and want; labour to rescue from the depths of pauperism and ignorance the young and inexperienced, that by means of a useful and judicious education they may become a national blessing, instead of remaining a burden on the community in the ranks of hereditary pauperism; and thus lead them by precept and example to love and serve God, and to become by His blessing honest, truthful, and industrious artizans and servants — healthy because industrious, happy because virtuous, and contented because religious. And thus, whilst we help forward those who learn, that there may be more who are qualified to teach, the public voice proclaiming that better-educated our people must be, both for the national welfare and our own individual benefit; whilst we instruct them how to read and write and keep accounts, to which I would add, the legal system of weights and measures, and also the measuring of land, the knowledge of useful things connected with every-day life, all games of skill, and occupation in those special manual employments, by the use of which they are afterwards to live, and by which they are brought acquainted with the sweets of industry, let us also labour to instil into their minds some plain practical truths; let us remind them that their interest and duty are the same; that cleanliness brings comfort, sobriety promotes health, industry yields plenty, honesty makes friends; that a living faith is the best divinity, a holy life the best philosophy, a tender conscience the best law; that honesty is the best policy, temperance the best physic. Let us teach them, I say, that the best patriotism is to free the country from vice, the best freedom is the freedom of every man from his besetting sin, the best liberty is the liberty of well-doing. Let the tendency of our education be to show them that "he is rich enough that wants not, he great enough that conquers himself, he good enough that lives to die well." Let our sympathy convince them of our desire that their life of toil may not be followed by an old age of destitution; and that

"If youth did know what age did crave,
Many a penny would it save."

Let us teach them to let their will be their friend, their mind their companion, and their tongue their servant; and never to forget that the house shows the owner, that a handful of good life is better than a bushel of learning, and that he who respects himself will ever be respected. And if thus you agree with me as to the meaning of education—that it is the training not only of the head, but of the heart and life, the teaching man's humanity, the training immortal souls for usefulness and glory—if you believe that these things appeal to the noblest impulses of the human soul—if you desire that the peculiar glory of England may henceforth be a social, an intellectual, and a moral glory—the glory of laws made more equal in practice as well as in theory, of institutions made more enlightened both in their general and special application —the glory of seeing the cottage home of our honest labourer worthy of Britain's sons—the glory of descending into the receptacles and abodes of filth, of suffering, of ignorance, and of crime, in order that by descending you may raise and cleanse and illumine and amend—the glory of industry whether in agricultural or manufacturing pursuits encouraged, of commerce extended, of health promoted, of education made universal—the glory of drying the tears, of brightening the hopes, of elevating the character, of recasting the history of man, of making freedom the guarantee of order, toleration the ally of religion, government the object of love, and law the helpmate of virtue—if such are your opinions, as they are mine, you will also agree with me that it is something worth living for, to gain a people's gratitude, to promote a nation's welfare, and to enhance the position and prosperity of the British farmer and the British labourer—

"These arts still peace to happy Britain brings;
These are imperial arts, and worthy kings."

(Cheers).

Mr. Trethewy (of Silsoe) said that the subject had been so fully and ably treated by Mr. James, that it seemed to be almost exhausted, and he felt it a very difficult matter therefore to attempt to follow him. In most of the rev. gentleman's remarks he perfectly agreed, especially in his estimate of what constituted true education, and his description of which certainly differed somewhat from that which had been regarded as education in times past. Other and improved ideas were, however, extending over the public mind in that respect. Heretofore education had been merely looked upon as book-learning; but Mr. James had described it as something practical, useful, and judicious. The difficulty which had always surrounded the question, to his mind, was the time which was necessarily occupied in carrying out education to such an extent as to make it truly effective and valuable. Everybody knew that the earnings of the children of the poor, where the family happened to be large, were a matter of great importance to the parents; besides which, it should be remembered that the time devoted to the school was so much time abstracted from labour. Still, a great deal might be done in the way of education at an early age, and especially when the children were about 11 or 12 years old. There was one system of education and training to which he very much objected. Of that, having been a poor-law guardian for some 15 or 16 years, he had had some practical experience; he alluded to the system of education and training pursued in the workhouse schools, which was not of a character to enable them to get their living in after life. He thought it was highly desirable that the lads educated in these schools should be put out as soon as they were old enough, and persons could be found to take them; for if kept there beyond a certain age, they were apt to imbibe the spirit of hereditary paupers: paupers they were brought up, and paupers they often remained as long as they lived.

Mr. H. **Gibbons** (of Bucks) concurred with Mr. James that education was a very useful ingredient in forming the character, and that it was desirable every child on British soil should have a fair portion of it. But one great difficulty in the way of its general diffusion throughout the rural districts had always appeared to him to be the isolated position of the farmer, which placed them at a manifest disadvantage in comparison with the inhabitants of towns, having no National or British Schools, Educational Institutes, or even Ragged-schools; in fact, the Sunday-school was the only institution which could be made available to the children of the agricultural poor. The idea he had entertained, as to what education was, differed rather from that of many persons. Some appeared to think that education consisted in what Mr. Tretheway had termed "book-learning." For his part, he considered that an educated man was one who had received instruction in reading, writing, and arithmetic—who had learnt how to use his arms and legs, and knew how to get his living. During the period of infancy, the mother was the child's chief instructor; but with her teachings, an intelligent parent should always combine the instruction to be obtained in the Sunday-school. The period of life which followed infancy was one which, in the agricultural districts, was very much occupied with labour; but it was patent to every one who was acquainted with those districts, that there were seven months of the year in which there was a great deal of idle time, and the blank pages of rural life were left to be filled as best they might be. In many villages, he was sorry to say, the only available places of instruction for the labouring youth was the beer-shop. He himself had often grieved over the situation of his own farm-servants when he saw them congregated at the beer-shop, and where the instruction they derived was only such as led to ultimate misery and destruction. For this state of things the best remedy that suggested itself to his mind was the establishment of village evening-schools; and, in his judgment, that was a practical question which the Government might take up, and for the carrying out of which some portion of the parish funds might be made available. He was satisfied that by the encouragement held out to them by evening schools, and the experience acquired by them on farms, the youths and labourers in agricultural districts would be able to secure to themselves quite sufficient knowledge to aid them in their subsequent career through the world. In the parish in which he resided (Bledlow) there was a district union school for the education of pauper children, and the style of education given there was more calculated to make them useless than useful members of society; for the simple reason that it was carried to excess, and the children learnt more than reading, writing, arithmetic, and the rudiments of religion, with a too limited amount of industrial training. Why, they actually went the extent of teaching algebra! (a laugh); and he thought no gentleman present would differ from him when he said that in his opinion that was carrying it too far! (Oh! and a laugh). Besides this, the doors of the establishment were shut to the children of the industrious poor, whilst they were open to the illegitimate offspring of abandoned women and the deserted children of worthless parents. Of the advantages offered by this school the people were not slow to avail themselves; for with the poor there was a strong notion that "book-learning was a very fine thing." But, in his (Mr. Gibbons's) opinion, book-learning alone was a very bad thing, unless it were combined with useful and industrious habits. Such were his views upon the question, and he should be glad to hear some method propounded by which schools could be established in such isolated districts as those to which he had referred. How to make a school available for the children of the poor in the long winter nights was a great difficulty. On his own farm one of his daughters had undertaken the conduct of a school, and begun with two or three children of poor persons in the neighbourhood. They met once a week—on the Saturday—but bringing their slates and books in the interval to have their sums and copies set. The progress which the children had made was highly creditable to them; and to show how ready they were to receive instruction, he might add that the number of attendants had grown from two or three to fourteen, and that the applications of candidates for admission were constantly increasing. The education imparted was reading, writing, and instruction in religion: and last Saturday he saw the children engaged in sewing. If they could establish schools of that description generally in the rural districts, the results, he was sure, would be most satisfactory and useful.

Mr. **Beale Browne** (of Andoversford) said he felt that some apology was due from him for rising to speak, as he was not a member of the club. He was indebted to his friend Mr. Bullock Webster for being present that evening, and for the high advantage of listening to the remarks of Mr. James. There were a few points in Mr. James's address, to which he would, with the permission of the chairmain, briefly refer. Nothing in that address had struck him more than the observation that education did not in every case prevent crime. But if education would not always prevent crime, every one in that room would acknowledge that ignorance was the parent of crime (Hear, hear). Religion must, as Mr. James beautifully showed, be the foundation of all useful education. But religion was a thing which it was not in the power of mortal man to cause his fellow-man to embrace in heart and life; and, therefore, education did not of necessity prevent crime. It was remarked by Mr. Gibbons that in the agricultural districts the education of the labouring classes was often surrounded with great difficulties. It was, in fact, his own experience of such difficulties, and a desire to ascertain how they might be removed, that had brought him there that evening. He lived in a rural district which must be well known to all present—the Cotswold Hills—and having the whole of a parish and other land around, he could only muster fifteen children in the school. What kind of a school could anyone expect to see for so small a number of children, especially when the roads were so abominable that it was almost impossible for children to attend in bad weather? It had occurred to him that in the education of the poor they might have an auxiliary, and he begged to throw out a hint for the consideration of those present: They had reformatories for a certain class of children, and such establishments were doubtless doing a great deal of good; but it had struck him as a great deficiency and evil, that the industrious and honest poor had not the same advantages as the depraved poor (Hear, hear); and this matter had weighed so much on his mind, that he had determined to bring the subject forward at the next Quarter Sessions of his county. Farming as he did no less than 1,200 acres, he had opportunities for introducing a great variety of mechanical operations; and he was prepared, as he hoped others would be who were similarly situated, to establish a school for instructing agricultural labourers, and fitting them to fill situations in different parts of the world. Having been an active magistrate of his county for many years, and had a good deal of experience with regard to prisons, he had often been shocked by observing that the vicious poor had often more temporary advantages than the virtuous; and he had sometimes been pained to hear magistrates say to a man who came before them at the end of the autumn, charged with some petty crime, while the laugh went round among them, "Ah! John," or "Ah! Thomas, you are come back to your winter quarters"—the truth being that the man was better off in prison than at home. To counteract such a state of things, there should, he thought, be industrial schools established for the well-disposed poor. One of the greatest difficulties connected with education, in the agricultural districts, was that children were taken away from school so early. In order to meet this evil, the foundation must be laid early, and the work of education be afterwards carried on by means of the evening-school. But something more was required; and he thought industrial schools for young persons at a later period would prove a most effectual means of supplying the educational wants of the labouring population. An able minister of religion once told him that he used to frame his sermon while he was working in his garden at five o'clock in the morning; and in like manner, he believed it was practicable to give most useful instruction to labourers while they were digging-up mangold-wurzel for sheep, or otherwise employed on the farm. He could not refrain from making these remarks in reference to a scheme which was then in embryo in his mind, and he thanked the meeting for the attention which it had paid to his remarks.

Mr. H. H. TATAM (Moultan, Spalding) said, admitting as he did the ability with which Mr. James had introduced the subject, there were one or two points on which he ventured to differ from him; the principal one being that which had reference to the benefits conferred by the members of his (Mr. James') own profession in regard to education. No one could suppose that he had any hostile feeling to the clergy, as a body, when he stated that he was himself a member of the church; but he feared that the education of the people of England had been more retarded by clerical interference than by almost any other cause. It was with extreme sorrow that he expressed such an opinion, but it was an opinion which was the result of great consideration and considerable public experience in his humble capacity. The vast importance of education in the rural districts was evident from the fact that nearly the whole body of female domestic servants came from those districts, the young females in other districts being generally employed in various branches of manufactures. If, however, education were deficient among the rural population generally, it was especially so amongst females, and particularly was this the case as regarded that useful education which had been spoken of that evening (Hear, hear). Numbers of young girls were turned into the field to labour when they ought to be under education; and there many of them became conversant with vice in its grosser forms. Indeed, hardly anything that he could state would exceed the reality of what had taken place in thinly populated districts, under the present improved system of agriculture. What he especially referred to, when speaking of the clergy as having retarded education, was the refusal to educate children unless the parents consented that they should receive religious education. He granted that it would be for the children's good to have such education; but many children who would attend those schools were children of Dissenters; and because there was a refusal to attend church and use a certain form of prayer to which the parents objected, the benefits of education were in fact denied. Such conduct appeared to him very illiberal, and it was directly opposed to the course pursued in some of the best and most successful educational institutions in the country. He did not concur in the remarks of Mr. Trethewy with regard to the education given in the union schools. He was for some years the chairman of the union in which he resided, and he could assure that gentleman that the boys and girls of the union schools were sought in preference to the other children of the neighbourhood. He might here observe that in union houses and in prisons religion was no bar to education (Hear, hear). Persons who proclaimed themselves Dissenters were allowed to receive education without the accompaniment of religion: they were not deprived of the benefits of education because they were Dissenters (Hear, hear). As regarded reformatories, he admitted that in such establishments young thieves were about to receive such training and education that the children of honest labourers would not be able to compete with them. It was bad in principle that the pauper, and even the felon, should be better educated than others; and such a state of things made it incumbent on the Imperial Legislature to provide for the better education of the honest and industrious rural population generally (Hear, hear).

Mr. TRETHEWY wished to offer one or two words of explanation in consequence of what had fallen from Mr. Tatam. It was not so much the course of education in the workhouse which he (Mr. Trethewy) complained of, as the fact that the children were kept so long at school without receiving some useful training.

Mr. **Tatam** said that by education he meant useful training.

Mr. **Skelton** (Sutton Bridge, Wisbech), said that, belonging as he did to the same district as Mr. Tatam—the Lincolnshire district—he could not help saying that he thought at least nine-tenths of the clergy there were not amenable to the charge of offering obstructions to the education of the children of the labourer. (Hear, hear). For the most part, if not universally, no religious difficulties were raised; and in his neighbourhood the difficulty was not to find schools, but to get children to attend them—a difficulty which must always exist where farmers could not withstand the temptation to employ children early. (Hear, hear). It was natural for parents to wish their children to be earning something, but it became employers to endeavour to persuade those with whom they had influence to keep their children at school. He should not have risen if he had not thought that Mr. Tatam had censured the clergy too strongly in reference to the parochial school system—a system, for the general management of which the Government inspectors had reported in their favour. (Hear, hear).

Mr. **Tatam** said, Mr. Skelton having thought proper to contradict him, he felt bound to mention a fact in support of what he had said. In his own village there had been, from the time of Charles I., an endowed school with an income of £500 a-year; and until two years ago, when the Charity Commissioners interfered, no child whose parents would not let it conform to the religious views of the clergy of the Church of England was allowed to receive education in it. In the adjoining village, moreover, the school was entirely under the control of a clergyman who took extreme views on religious matters; in fact, he was a rank Puseyite (cries of "Order"), and no child could be educated without conformity to the highest church principles.

Mr. **Cressingham** (of Carshalton) observed that in the case of endowed schools, it was frequently one of the conditions of the endowment that no child should be eligible to the benefits of the school unless he were a member of the Church of England (Hear, hear).

Mr. B. **Browne** felt bound to observe, in support of what had fallen from Mr. Tatam, that a similar state of things to that which he had described was to be found in many parts of Gloucestershire.

Mr. S. **Sidney** (of Peckham) could not concur in Mr. Tatam's general censure of the clergy. On the contrary, he thought that no man could have paid the least attention to the history of rural education during the last five-and-twenty years, without being convinced that but for the exertions of the clergy there would have been hardly any rural education at all (Hear, hear). The truth was, that until recently farmers, as a body, were opposed to education. Their views had since changed, and he rejoiced that such was the case. Labour was for a long time a drug; and as long as that was the case, farmers felt scarcely any more interest in the condition of their labourers than in that of their four-footed animals. It was hardly to be expected that they should; their concern for the welfare of those whom they employed, like that of manufacturers, depended in a great degree on their own interest. Emigration and other causes had diminished the supply of labour; and at the same time there arose among agriculturists a demand for skilled labour, in consequence of the introduction of machinery of various kinds on farms; concurrently with this farmers became convinced of the necessity of improving the education and enlightening the minds of agricultural labourers. In considering this question he could not help recalling the fact that there had been an hereditary difference between the farmers and the clergy. Farmers were perhaps, the most conservative body in this country; but he could recollect a period when they were living on the worst possible terms with the clergy. Tithes had since been commuted, but farmers had not yet outgrown their former prejudices against the clergy. For a long period there was a pecuniary war between them: the remembrance of that was now happily dying away; it was in the highest degree desirable that they should endeavour to agree and act together cordially in the matter of education. How was this object to be secured? There could be no doubt that farmers knew better how labourers' children should be educated than the clergy (Hear, hear). From this observation he, of course, excepted Mr. James, who was not less practically acquainted with the habits and requirements of the labouring population than the farmers themselves (cheers). It was very desirable that a good understanding should be established between the two, in order that the right kind of education might be afforded. He could not forget the advantage that the country had derived from having at least one educated man in a parish—he meant the clergyman—where, perhaps, nearly all the other inhabitants were uneducated. He thought that the clergy had, as a body, devoted more time and money to the promotion of education than any other class of society.

The **Chairman** said he was sure that, after the very able remarks from Mr. James, and the discussion which had followed, they would expect very little from him. He must beg to observe, however, that although education was not making all the progress they could wish, it did not follow that it was making no progress at all (Hear, hear). In reading a very able speech delivered by Lord Stanley the other day, at Sheffield, he found the following allusion to some remarks of Prince Albert at the Conference, with regard to the increased number of schools. "Prince Albert stated, in his speech, at the London conference, that while in half a century population has only doubled itself within these islands, the number of schools has increased as 14 to 1; that in 1801 the number of schools in England and Wales was between 3,000 and 4,000, while in 1851 it had risen to 46,000; and that while the proportion of day scholars to the entire population was in 1818 1 to 17, it was in 1833 1 to 11, and in 1851 1 to 8." This is certainly a very rapid increase. He quite concurred in the observations which had been made with regard to the difficulty which arose in carrying on education after the children had left school; but this kind of difficulty was not confined to the rural population. They all knew that, wherever education had been obtained, if young men ceased to do anything to improve themselves after leaving school, they soon became very ignorant (Hear, hear). The difficulty in the case of young persons in the rural districts was certainly very great. It was, however, owing in a great degree to the want of evening-schools; and nothing, he thought, would be more conducive to the well-being of the younger portion of the labouring population than the establishment of good schools of that description (Hear, hear).

A vote of thanks having been passed to the introducer of the subject,

The Rev. C. JAMES replied. He congratulated the meeting on the fact that this was the second occasion, during the year, on which the Club had discussed the means of improving the condition of the labourer. A gentleman had been pleased to express some strong sentiments and doubts in reference to the self-denying sacrifices and aid which he maintained had been given by the clergy to the cause of education, the truth of which the country was well aware of, and the award of the Government capitation grants, to which he referred them, fully corroborated. And though Mr. Tatam might feel aggrieved as to the supposed exclusiveness of the character of education in some school or schools in his own vicinity in Lincolnshire, he (Mr. James) maintained that such instances were the exception and not the rule, and that the greatness of the cause should set aside the littleness of personality. And whilst acknowledging their appreciation, and vote of thanks, for the remarks which he had made, he would only ask them practically to carry out his suggestions in their own respective districts, and ever to show, in all their transactions through life, that the British farmer knows no party but his country.

Mr. TATAM explained that he had not spoken of a district, but of parishes.

Mr. J. N. LEE, in supporting the motion, urged the necessity of individual exertion. No man, until he himself put forth his own efforts, could tell the amount of good he might be the means of accomplishing.

On the motion of the Rev. T. C. JAMES, seconded by Mr. B. WEBSTER, the following resolution was unanimously adopted:

"That industrial training in things suited to the district, and by the use of which the children of the working classes are afterwards to live, should form a part of all school teaching.

"And, that the progress in mechanism, science, and the arts renders an improved judicious education essential to the labourers, while it would be highly advantageous to the farmers."

A vote of thanks to the Chairman terminated the proceedings.

SKILLED LABOUR AS A NECESSITY IN THE ADVANCE OF AGRICULTURE.

Popular a thesis as education has been of late, it has rarely commanded more general attention than it did during the first week in November. Everybody would seem to have been thinking and talking of it. It is a matter that has fairly rivalled in interest the taking of Delhi, and the launching of the Leviathan. On the Tuesday Lord Brougham, hale, hearty, and energetic as ever, delivers one of his comprehensive and suggestive addresses to the members of the Leeds Mechanical Institution. His Lordship's text-word is Popular Education. On the Wednesday the Bishop of Manchester, Sir John Kay Shuttleworth, Sir John Pakington, and others, discuss the same subject in Lancashire. *The Times* follows in due course with a leader; while not to be behindhand, but rather opening the business of the week, the London Farmer's Club ushers in its Winter Session, on the Monday, with Education once more as the point for consideration.

It must be understood that the Club discusses Education very much in the same way as does the world at large. That is to say, it takes counsel, advises, and resolves far more for the proper training of the working classes than for any other. For once that any such improvement in the farmer himself has been selected as the topic here, that of his labourer has been entertained ten times over. To be sure, the employer is just now beginning to feel his own wants and rights in the development of the middle-class education scheme. As a rule, however, as with all the rest of us, when master and man have been thus associated together, it has been to consider the position and the requirements of the latter. Seldom, in fact, has the improvement of the one class been brought to bear so directly on the interest of the other, as in the wording, at least, of the Club subject. Of course everybody knew that the better brought up a servant had been, the better servant was he likely to make. That is, his conduct, manner, and habits would all promise something more than what we could expect from the thoroughly ignorant, and unenlightened boor. But still the common effect of such schooling has been rather to turn out a respectable man than a skilled workman. Indeed, it has been by no means an unusual complaint that some labourers have been too much educated. Their "book larning," instead of fitting them for the duties they have been called upon to fill, has often tended to a precisely contrary result. In place of steady hard-working men, the schools have furnished us with conceited dissatisfied "fiddlers."

A becoming education, in short, is rather a difficult thing to define. It may be simply cramming a man with reading, writing, and arithmetic, or it may be properly qualifying for that course of life he has to look forward to. Now the wording of the Club subject was made to depend especially upon the latter — "That the improved education of the labourer is essential to the present position of the farmer." Unfortunately, perhaps, the debate did not keep so close to this new reading as might have been desirable. The Reverend Mr. James, who opened the discussion—and few could be better qualified to do so—read an essay on the education generally of the labouring classes. The style of his paper was of itself somewhat remarkable. It positively abounded in wise saws, quaint maxims, eccentric definitions, and startling antitheses. His reasoning, moreover, was such as we might have good cause to expect from a gentleman of so much ability and experience with what he undertook. But still the improved education of the farm servant as *essential* to the farmer was only incidentally touched on. We may point to two or three sentences which should have given a more general tone to the opening address and subsequent debate: "Let there be, in addition to the ordinary tuition, works of industry and manual skill united—seeing that what were once considered complicated machines as applied to agriculture are now common things, the reaping machine an acknowledged fact—and boys who can turn their hands to rectifying or mending, or even using them skilfully, are sure to get on; as any lad who was taught turnip hoeing as practised on the Duke of Bedford's estate at Woburn would always obtain extra wages, and be eagerly sought for by the farmer in the district at an advanced sum, so, I say, let such work as I have mentioned henceforth form part of our intellectual and industrial training. Let our poor children be educated, as far as possible, in those branches of knowledge and trade which bear on that specific kind of labour or skill which in their locality is required."

This is the improved education of the labourer required, and none know this better than the farmers themselves. What is the impediment to the yet extended use of one of the chief features in the practice of modern husbandry—machinery? Is it disinclination on the part of the farmer, or exorbitant prices demanded by the manufacturer? Both buyer and seller are too good judges, by this time, to let any such showing stand in the way. Ask one or the other, and from the experience of either you will have much the same answer. The reason why efficient machinery is not more generally employed for agricultural purposes is from the want of efficient hands to work it. Not, however, that the men themselves have any lingering dislike or prejudice to conquer. The days are long since passed away when they felt it a duty to their own order to break up a thrashing machine or a haymaker. The chief cause why more labourers cannot be entrusted with machinery, is that implied on the discussion card of the Farmer's Club—they are not educated up to their work. The men know this well enough themselves, and see and feel daily the advantage a skilled man has over them. But of course the loss is mutual—to none more so than the employer. Mr. James refers to the reaping-machine as "an acknowledged fact," as no doubt it is. On the very day succeeding the discussion, we were told by one of the best farmers in Cambridgeshire that during the last harvest, with his corn quite fit, he lost half a week of beautiful weather in this wise. He had purchased one of the favourite reapers, and he had to wait for a man from London to set them going in the right way! And, as this same man was due in three or four places at once, the very object of the reaper became in a great measure destroyed—that is, making the most of a fine day. The same argument applies as strongly to the use of the steam-engine—or we should have not had such serious accidents to report of late—and in some places even to the drill. There are a few educated men, for whom we have to wait our turn. These know their own value, and often enough abuse their position. It so happens that, with the best means and appliances, the most judicious arrangements, and most suitable weather, a harvest or seed-time may be jeopardized or lost, simply because a foreman is too busy, too independent, or, as it has happened, too drunk to come to his work.

This demonstrates "the improved education of the labourer the present position of the farmer essentially requires." By all means give him a good cottage and good moral teaching. Encourage evening schools and self-reliance and respect. But do not forget in these times to educate him as you would any other man, to the business he is intended for. He must get now to something beyond thatching and hoeing, and hedging and ditching. Unless, that is, you still prefer to wait for *Mr.* Smith, who "can't come till the day but one after to-morrow."

We may leave the report of the Club proceedings to speak for itself, while we shall conclude with an extract from elsewhere that shows it is not the man alone who wants a *fitting* education. Mr. James dwells strongly on the advantages of a good wife. A few weeks previous, at the Sudbury (Suffolk) Meeting, Mr. Thomas Hawkins turned education to something the same account—"In many of their modern schools they got a vast deal of knowledge, with, he was sorry to say, very little wisdom to direct that knowledge; and with regard to those flimsy duties which were introduced to amuse the children, and as a relief to the more laborious studies, he must say that they often puffed up, and certainly did not tend to the real improvement of the labouring class. If they wanted to educate a child they must consider the circumstances of life in which it was likely to be placed; and his education should be such as would fit him for that position. With regard to girls, he was sure the flimsy knowledge he had referred to had only tended to make them worse servants, and to make their position worse than if they had merely had a plain and useful, with at the same time, moral and religious, education. Take a girl from a National school, and the chances were she could tambour and crochet, but not be able to darn a hole in a stocking. He recollected the time when they had better servants at a less cost than at present; and the increase of wages was only spent in finery and nonsense, which was one fruit of the education given them at the National schools. They were told by many landlords and country gentlemen that they ought to do as their grandfathers did, and keep more men and women servants in the house. But they were not to be got: the first thing a girl inquired, in applying for a place, was, 'Is there much work? Are the wages good? Do you keep cows?' People complained of the price of butter and cheese; but one great reason was that there were no dairy-maids. Whatever Mr. Inspector Mitchell might say, he believed these to be fruits of the modern system of education; and he believed that such an education would not improve the morals, however it might the knowledge, of the agricultural labourer."

When Mr. Colville, at the Sparkenhoe Club a year or two since, began to talk about dairies and milk and butter and cheese, he should have had Mr. Hawkins to support him. Education is not all "book-larning," tambour, crochet, "high life, and the musical glasses."

PRESENTATION OF TESTIMONIALS TO MR. AND MRS. BREEDON EVERARD, BY THE WORKING CLASSES OF GROBY.

On Thursday evening, October 29th, a deputation from the working classes of Groby waited upon Mr. and Mrs. Everard, at their residence, for the purpose of presenting them with testimonials expressive of their affection and sympathy.

Previous to the commencement of the proceedings, the deputation, consisting of seven persons, appointed from their own body a chairman, who introduced the business of the evening, by saying: We are assembled together as the representatives of the working classes of Groby, to express our sympathy and regard for the many favours and blessings we have received at the hands of our worthy benefactors, either directly or indirectly; and to testify those feelings, we are about to beg their acceptance of these small tokens of our gratitude—a copy of the Holy Scriptures to Mr. Everard, and a Church Service to Mrs. Everard. Although trifling in themselves, they are accompanied with many a grateful heart, mingled with many an earnest prayer, that the blessing of God may attend them in all their future undertakings; and although the dark cloud of Providence has passed over them, and concealed for a time the bright anticipations of their future prospects, yet all, we trust, will work together for their present and eternal good. With regard to Mr. and Mrs. Everard, I could say much in their praise, but not too much. Mr. Everard, as a gentleman and a neighbour, is well deserving of the appellation; and as an employer, stands in this neighbourhood without a rival. Mrs. Everard, as a lady, has distinguished herself in so many acts of kindness as to merit our highest esteem.

One of the deputation then spoke as follows: Mr. Chairman and friends, it is with mingled feelings of sorrow and joy that I rise to speak on this occasion, because part of our business has reference to sympathy. I am sorry that an occasion for sympathy, under the circumstances, should occur; but I rejoice that we are called to sympathize with those who are worthy, and have also justly gained our high esteem. We are come to express our sympathy with Mr. Everard; we do so on account of capital sunk in his farm and premises. You all know something of the large outlay he has made, and also of the lost labour of his enlightened and energetic mind, and of his blighted hopes for the future. Mr. Everard's powerful intellect has for years been brought to bear upon agricultural pursuits with great success during the past and well-laid plans for the future; and to have all at once blighted by one unexpected act calls aloud for sympathy. We sympathize with Mr. Everard's feelings; and where is there a heart so hard that could not feel, when they heard or read the touching statement made by him in the adjoining room a fortnight ago, in reference to home, family associations, and the poor, and their affection towards him? I trust this evening will prove, beyond all doubt, that Mr. Everard lives, and will live, in the affections of the working classes of Groby. We have now a more pleasing duty to perform—to express our high esteem, and to state the reason why we esteem Mr. Everard as an employer. Allow me to refer to the number of his old servants, some of whom have been with him from the commencement of his brilliant career, and others a long time; this fact tells its own story: for this reason we esteem him. From all the testimony I can gather (and I have a good opportunity of knowing), there is a growing attachment between master and servants: we deeply deplore the snapping of these ties, while we rejoice in their present existence. Let us now have a peep at his farm, and round his greatly improved house and premises. If we had done so a short time since, where could we find work that wanted doing without also finding men doing it? Why, sir, if all Old England's farmers were to do as Mr. Everard has done, working men would be worth 20 per cent. more than they are now, and we should be able to do without foreign corn. This fact tells us he is a spirited employer, and not only a blessing to the village, but also to the nation: this forms another basis of our esteem. We believe Mr. Everard is a man—yes, a man in every sense of the word; we think that term the highest given to our race. Whatever titles are given, from esquire to prince, no addition is given to the greatness of the term man, because it is the one God has been pleased to give:

"A wit's a feather, and a chief's a rod,
An honest man's the noblest work of God."

And now we come to the climax; on this point Mr. Everard is a philanthropist. He does not proudly say, "I have a right to do as I please with my own," nor does he selfishly clutch all he can get. No; he believes this truth, "The earth is the Lord's, and the fulness thereof." He remembers that the Lord has many poor to be taken care of; he acts upon the principle of only being a steward for the King of Heaven; he has many times, no doubt, felt the luxury of doing good. I believe, sir, there is scarcely a family in the village, that is not the better for Mr. Everard living in it, either directly or indirectly. This fact may not be known to all the parties themselves, for Mr. Everard works in private, as well as in public, for the good of his neighbours; he has tried to raise the lowly, and help those that are weak; relieved those who were in distress, and sent consolation to the afflicted: thus, the afflicted have been for years his constant care. I can very well remember, eleven years ago, in the time of fever, the particular attention he paid to the comforts of those suffering from that dire disease. The widow's grief has been assuaged, and the widower's affliction relieved by the kindness of his heart, and with the bounty of his hands; and now that the tide seems to be against him, it is no wonder that the warmest sympathy should be felt towards their benefactor. I believe Mr. Everard only needs to be informed of a case of need, or a suitable object of benevolence, and he is ready with assistance; and because he has been thus ready, we also are ready with this expression of our gratitude and love. As one who has taken an active part in this movement, I have the pleasing task to inform you of its origin and success. Your circumstances, Mr. Everard, disturbed our rest at night, and occupied our thoughts by day; we were afraid the name of Groby would be an obnoxious sound, and we reflected upon what would make that good old name pleasant still, and retain the best part of you with us (that is your affection). The answer was, "Give him a Bible, and that will do it". The plan was named to a friend, and it met with a hearty response. I can assure you no begging was resorted to; we visited most of the working class, saying, "We are sympathisers with Mr. Everard, and wish to give him a Bible as a token of esteem; we are not come to beg, but to catch honey drops." And drop after drop came in such abundance that our highest expectations were more than realized. Yes, and of some poor widows, whom we thought were too poor to spare a drop of honey in the shape of cash, we passed the doors; and some of those sent after us, and others let us know they were not pleased with our passing by. Thus have the hard-handed but tender-hearted working classes given expression to their feelings towards you. I can assure you that you live and shall live in their affections.

Another of the deputation spoke as follows: Gentlemen, it is with great emotion that I rise to perform my duty on this occasion. I am sure that the circumstances in which our worthy friend and benefactor is placed call forth the sympathy of every true Englishman and every Christian; for although he may have been dealt with legally, we feel sure that he has not been dealt with justly. But we have not come here to-night merely to sympathise with Mr. Everard, but to give a token of respect to him who has acted as a father and a philanthropist to the sick and needy. Sir, we have met to-night to give you a copy of the Holy Scriptures as a token of respect from the working-men of Groby for your kindness to them for a number of years; and I am sure, sir, that I do not only feel a pleasure, but proud to be able, in the name of the working-men, to offer to you such a present, not because of its external beauty, but because of its inestimable value. Having made these few remarks, I must now commend it to your perusal, praying that the streams of divine love which run through every page may enrich your noble mind and the minds of your beloved partner and children, and your children's children, to the third and fourth generation.

Several others of the deputation delivered addresses highly complimentary to Mr. and Mrs. Everard.

One aged man attempted to address the company, but his words were choked in sobs and tears. When the feelings of the party had become more composed,

The CHAIRMAN commenced reading the address to Mr. Everard:

"THE WORKING CLASSES OF GROBY TO MR. BREEDON EVERARD.

"Deeply regretting the circumstances in which you are placed, we have felt a desire to express the gratitude we feel in our hearts towards you, not only for the respect you have manifested to the working classes generally, but especially to the sick and poor. We fixed upon the bible as the most appropriate token we could offer to you, because we believe you have been influenced by the principles of that book in looking after cases of need, and helping them—the bible, in which you read what the divine Author of that book says, 'I was an hungered, and ye gave me meat; thirsty, and ye gave me drink; naked, and ye clothed me; I was sick, and ye visited me.' Now, see how Christ regards it—'Inasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me.' The bible, that its doctrines may be embraced and its grace ever adorn your whole life—that its consolations may be richly enjoyed in sickness—that its divine truths may be your staff, its Author your comforter in the hour of death, and that the future glories it reveals may be your eternal portion. It is our prayer, that wherever your future lot may be cast, the cloud of divine Providence may go before you—the light of his countenance may rest upon you, so that 'when the earthly house of your tabernacle is dissolved you may have a building of God—a house not made with hands, eternal in the heavens.'"

The presentation then took place. The book contains this inscription:—"'Blessed is he that considereth the poor: the Lord will deliver him in time of trouble.'—Psalm xli. 1. Presented by the working classes of Groby, Oct. 29th, 1857, to Mr. Breedon Everard, expressive of the sympathy for the circumstances in which he was then placed, also as a token of the highest esteem for the tender regard manifested toward the sick and poor whilst amongst them."

Mr. EVERARD replied as follows: My dear friends and neighbours,—The warmness of your hearts has prompted you to speak far too approvingly of me. I blush when I compare my own short-comings with your honest highest praise. You have taken me so much by surprise in all you have said and done, that you have found me ill prepared indeed to offer a reply. These 'drops of honey,' as you term this courteous gift, will afford me consolation when the separation comes. The poor man's offering and the widow's mite are represented here. The poor man's offering is my highest honour; the widow's mite received a special blessing long ago, nor has it lost its efficacy yet. Be pleased to convey to those whom you represent the warmest expressions of my gratitude for all their numerous acts of kindness to me and mine, and more especially for this crowning act of all, which forms the keystone to the arch. I see amongst you men my seniors by many years, born in this same village, who have known me from the dawn of my existence, who are now come to offer me the choicest portion of their treasures—their sympathy and love. I never am unnerved except when amongst you; but when I meet a stalwart labourer with his eyes bedimmed with tears, or his honest wife with a prayer and a blessing on her lips, I confess it is more than my weak nature can endure. I and my forefathers were born and have lived amidst you and your forefathers, and we have learned to value and respect each other—I as the employer, you as the employed. The ties which have bound us together for so many years are about to be severed, and you prescribe this medicine to heal the wound. If my Lord Stamford has felt himself injured by me, how grieved I am he should have kept the secret cause concealed within his own breast! I am assured that had an interview been granted me, one minute's explanation would have banished his imaginary wrongs. My Lord would thus have been spared much annoyance, and I am sure much distress, and one hereditary family of tenants more would have been left upon the estate. I should have continued a dweller in the home of my ancestors—the spot on earth of all other that I most love—and you would have had the man still a resident amongst you, who has purchased so much of your labour, and won so much of your esteem. During the last two months, few men have received so many marks of sympathy as I have, both personal and by letter. I have received one communication from the editor of a leading London journal, which does so much honour to human nature, that I will read you one short extract; I am sure his noble heart will forgive the liberty I take:—"It is a solemn thing to be compelled by the dispensations of Providence to break old ties, and to have to leave the home of our childhood, and the spot on which our forefathers have dwelt in peace and honour for centuries; but an awful responsibility rests upon the man, who, regardless of all these things, and intent merely upon the gratification of some selfish or revengeful feeling, violently breaks these ties, and forces a fellow-man from the hearth of his home and the graves of his kindred. Deeply sympathizing with you, sir, and trusting that as a Christian man you will find that even this calamity is among the 'all things that work together for good.' All honour to such a man; there may be many such, did they not lack the power of giving expression to their hearts' convictions. Be assured, this mark of your esteem will be cherished by me while life endures; and when I am gone it will be cherished by my children. Wherever my lot in future shall be cast, whether far away or near, I shall frequently offer up to the Throne of Grace a prayer for your temporal and eternal welfare; that your temporal wants may be supplied with a more liberal hand than mine, and that eternally you may be made kings and priests for ever."

The CHAIRMAN next proceeded to read the following address to Mrs. Everard:

"We desire most sincerely to express our gratitude for the many benevolent acts of kindness received from your hands, and especially for the administering so liberally to the wants of the sick and needy, in remembrance of which it is also our desire that you should possess a small token, and to accomplish that object we have selected a Church Service, thinking that an appropriate accompaniment to the Bible, inasmuch as the doctrines therein contained can be proved by most certain warrants of Holy Writ. It is our most earnest prayer that you may yet be spared many years of happiness, to be to others a blessing, and be the able instrument in the hands of the Almighty as you have hitherto been, employing the talent thus given to you to the benefit and blessing of your fellow-creatures, trusting that you may ere long be greeted with that heavenly voice, 'Well done, thou good and faithful servant; enter thou into the joy of thy Lord.'"

The Chairman then presented a Church Service bearing the following inscription:

"'She stretcheth out her hand to the poor;
Yea, she reacheth forth her hands to the needy.'
Proverbs xxxi. 20.

Presented by the working classes of Groby, October 29th, 1857, to Mrs. Breedon Everard, as a token of remembrance for her undeviating kindness, and unlimited acts of benevolence manifested to the sick and needy."

In returning thanks for Mrs. Everard, Mr. EVERARD spoke as follows: It affords me the highest satisfaction to return my thanks for the studied honour conferred upon my wife. She often, I assure you, complains to me of her own shortcomings, and compares the little she has done to the much she might have done. Many circumstances have occurred to knit our hearts to yours; nothing on this earth can destroy that bond. May eternity cement it! God bless you all.

HOP PICKING.

Though our Saxon forefathers were great beer-drinkers, and this old English beverage was quaffed by even the ancient Britons, who called it beer as we still do, yet these fine benighted old fellows were too busy hacking and hewing each other to pieces to bestow a thought on the hops, which even then grew wild about their homesteads. They contented themselves by giving a flavour to their malt liquor with bitter herbs, amongst which the St. John's wort and betony were chiefly predominant, though, like our modern brewers, they did not altogether lose sight of the camomile, whose aroma largely predominates in some modern bitter beer; and it may be some consolation to the imbibers of this fashionable drink to know, that one of our oldest herbalists has said that "ye sunne never shone on a betterer or wholesomer floure." But our ancestors went groping and grumbling about in the twilight of Time until as late as the period of Henry VII., without making any other use of the hop than that of a lotion, or it may be as a gargle occasionally, when some old fellow, probably taken with a fit of coughing—for history is silent on the matter—while gurgling at "his own sweet will," like Wordsworth's river, chanced to swallow a few drops, and the hop from that hour became immortal; or he may have dipped his finger in and caught the twang, as far-famed Elia's novice discovered the deliciousness of roasted sucking-pig; for who can tell? But to quit conjecture—all that is really known of the first use of the hop in brewing is, we find it mentioned among the items in old household books of the above-named period, though it may have been used for the same purpose a little earlier, and mention have been made of it among the myriads of records that were lost for ever before the art of printing was in vogue. But long before this discovery took place, the young hop-shoots were dressed as vegetables and eaten with meat, while the potato lay buried in "the womb of Time." Tea was served up in the same way at first, by the ignorant and uninitiated—the leaves eaten with sugar, and the liquor thrown away. But both hop-drinkers and tea-drinkers are wiser now, and, we think, in consideration of this great discovery, ought to fraternise. Let not the fair patronesses of the pump curl their pretty pouting lips in contempt when told that their long since-departed grandmothers never sat down to breakfast without lifting the foaming ale flagon to their honied lips, thus making metheglin of it, without the aid of those little confectioners, the bees.

For a short stroll there is no spot more refreshing to the eye than a hop-garden at this season of the year. No other garden looks more beautiful, though the dahlias, China-asters, and a few other autumnal flowers, are still in bloom. To our eye there is nothing prettier than the golden-coloured bine, peeping out in pale rich bunches, through which the sunshine is reflected as you look upward, as through a lady's coquettish-looking parasol. The air, all around, too, is dreamy, odorous, sleepy; and the last of the summer butterflies, as they come darting in and out between the tall festooned poles, in their rich livery of scarlet and purple bedropped with white—for the gaudiest of this short-lived insect tribe are now abroad—give something of a humming-bird look to the scene; and what with the blue sky arching high overhead, the swaying of the bine in the faint autumn breeze, the perfume and the husky rustle of the primrose-coloured cones, you might fancy that you were in some far-away land of summer, where the roses are always in bloom, and the song of the nightingale is never wholly hushed. A hop-garden resembles nothing so much as the border of one of those sweet green secluded glades which we sometimes stumble suddenly upon, when wandering deep into the heart of an old English forest, where the sun, shining through the straight and transparent-leaved hazels, is such a relief to the deep green twilight; while below, there is neither gorse nor bramble, fern nor thorn-bush—nothing but the velvet turf, Nature's own carpet, combed up out of the fallen leaves—for such a path may be found in some of our old picturesque hop-gardens. And here a lover of rural quietude will throw himself down, as Chaucer used to do more than four centuries ago, when he went out to watch the daisy open in the early morning—

> " ——— sloping him to lie
> On his elbow and half his side;"

and as he whiffs away at the cigar he has lighted, and watches the smoke curling high amid the gold-coloured cones, trailing stems, nodding tendrils, and in and out as if playing at "hide-and-seek" among the picturesque leaves, he will fancy it is the smoke of a fairy railway train ascending skywards, or a little cloud that had got entangled among the network of bines; and as he keeps rubbing the cones in his hands, and staining his fingers with the gold dust, he will fancy that all the flowers ever pounded together, with pearly dew-drops, in the bottom of the morning-star, and presented to Flora by Dis, never threw out a richer aroma than he there inhales. It is as if all the winds that ever went out Maying together had made that spot their mustering ground, and there let loose all the collected odours of their flowery treasures, to overwhelm the inhaler with a new and drowsy delight.

Neither is there any other out-of-door work that seems so much like playing as hop-picking. Reaping is killing work; mowing is suicide itself if persevered in; but picking hops is play, pleasure, and profit combined; those who bring up and pluck down the poles seeming to be the only parties who do anything at all in the shape of labour. As for the rest, they sit or stand (nay, we have even seen them lie down to it) whichever they please, a dozen of them singing together like one; and there, all garlanded with leaves and hung about with branches of gold, they pass the day as merrily as Ariel did,

> "Under the blossom that hangs on the bough."

Some bear baskets, others help to fill the hop-pockets, while the younger and merrier ones, when not overlooked, pelt each other with the cones, as that young rascal Love did his mother with roses; and over all the smell from the oast-house spreads, like the aroma of the altars of old, when gathered flowers formed the sacrifice; for the whole neighbourhood tastes of

> "Flora and the country green."

It seems to be a rule of the hop-garden to compel any stranger that enters it to pay his "footing." His feet are first dusted with a bunch of hops, and then the palm is held out for the customary honorarium, when, should the intruder refuse so proper a demand, he stands a chance of being thrown into a bin, and stifled beneath a flood of hops, by the fair but able-bodied pickers.

What picturesque groups these pickers ever and anon form along the highway, as they journey to or from the hop-gardens! One might fancy from their costume that they had made their purchases in Rag Fair, taking down the articles as they came to hand and repairing them afterwards; for they bear on their backs relics of every fashion and pattern, from the unmistakable cut of Stultz, to that of John Jones, jobbing tailor, Mint-street, Borough. First we have a woman in a man's coat, then a boy in the trousers of a six-feet man, cut off at the knees, with "ample room and verge enough" behind to stow away a bushel of hops. One trudges along in shoes "a world too wide," carrying a kettle in his hand; while another, eschewing all such torments, trips along barefooted, his head buried in an old bassinet cradle, and chirruping like a bird through the open wicker to the large-eyed and wondering baby, which his cheerful-looking mother is carrying, and which, suspended from the hop-poles, by-and-bye will sing as softly and sleep as soundly as the wealthiest little princess that ever closed her eyes on a feathered cloud of eider-down. Few of them care what they wear while at work; yet on a Sunday there may be seen, in the neighbourhood of the hop-gardens, many a beau and belle that you would hardly know again in their patched-up and well-worn hop-picking attire.—Illustrated Times.

GIPSIES.

Sir,—In the last letter I addressed you in reference to the state and condition of the New Forest, Hants, I took occasion to draw your attention to the serious evils which emanate from a class of individuals denominated *squatters.* These persons have, by virtue of a long existing custom and usage, established themselves as separate and distinct colonies, which are extensively distributed throughout this waste.

It is an ancient admitted plea of justification for a perpetual tenancy, that, if a family can erect a house and occupy the same, free from the ill-effects of wind and weather, within a space of twenty-four clear hours, they become, by virtue of such an accomplishment, tenants in fee of the ground they stand upon, and are suffered thenceforth to enjoy the same as a perpetual freehold.

From this circumstance, either with a view to promote a spirit of social accommodation, or to secure from external annoyances united support, or both, these people have been progressively encroaching for time immemorial on this sylvan waste, until they have ultimately succeeded in constructing villages, which they are pleased to term *towns,* in which they multiply in numbers, and in crime.

Being proximate to the coast, immediately opposite the port of Cherbourgh, and in close connexion and constant communication with the Channel Islands, the New Forest presents a most eligible theatre for the encouragement of smuggling, and the greater portion of the inmates of these mud-built *wigwams* are more or less in the practice of carrying on an unceasing trade in contraband wares. This lawless practice, combined with deer stealing, and poaching on an unlimited scale, may be looked upon as the chief resources of the villagers under consideration. Some years since, there was a notorious deer stealer, named Jem Dible, who occupied a hut in "deer-ending-town," near Wylverly Lodge, the residence of one of the forest keepers of the name of Toomer. This is the person, who once succeeded in tutoring a pig he had in his possession, to perform the duties of a sporting-dog. The porcine quadruped would gallop by the sides of hedges, through stubble and heath, and whenever he scented fur or feather, would come to a dead stand, and maintain his position as stiff as the staunchest pointer. This pig, Toomer had for some years, and for his good services was spared from the murderous knife of the butcher, so that he might be said to have "saved his bacon." Jem Dible was no less than fifty times incarcerated in Winchester jail, for longer or shorter terms of imprisonment. He was the most notorious poacher of his day, and has left behind him a name, that will go down with posterity for ages to come in the legendary annals of "feats of the forest."

From Dible's school, sprang up a race of similar characters, unrivalled by the *Waltham blacks* for their daring intrepidity. They spread terror in the neighbourhood around. Nor were their pursuits directed to deer stealing and poaching alone; the farmers' homesteads were assailed by these nocturnal depredators. Poultry, sheep, and pigs came alike to them, in fact, they made a trade of their daring ingenuity; and have been known to have succeeded, without a shadow of suspicion attached to them, of disposing of joints of mutton to the farmers' wives in the vicinity, which formed a part and parcel of the very sheep, that, twenty-four hours before, were grazing on their husbands' lands.

A very remarkable instance of detection, in relation to one of the Dible's, on the score of sheep-stealing, may prove interesting in detail. It happened in the month of December. Mr. Cole, of Bucklands, lost a sheep off his farm during the night; the animal had been killed on the spot on which it was feeding, and the skin and garbage were abandoned to a ditch hard by. Cole, on discovering his loss, ordered his horse to be saddled, and started off to Rhinesfield Lodge, the keeper of which, one Bumpstead, kept a brace of highly-trained bloodhounds, which were used for redeeming the red-deer that were frequently apt to stray away beyond the forest bounds. These dogs were conveyed in a cart to the field in which the robbery had been committed, and laid on to the foot-track of the perpetrator of the theft; accompanied by Bumpstead, Mr. Cole, and his son. The scent was quickly acknowledged by the canine retrievers; they drifted their way at an even pace, over a wild heath, a cold fallow, through a coppice, crossed the high road at Garlington Mill, through a turnip field, over a stubble, into the high road again, on to Arnewood farm, ran the length of a mile towards Batchley, when they entered the forest, and uninterruptedly entered Deer-ending-town, when they opened with the stentorian salute of ευρηκα. ("We have found.") On the parties entering the premises, in a shed behind the house was the mutton, cut up ready for retail purposes. The man Dible was so struck with the novel mode of his apprehension, that he credulously fancied the devil had had a hand in the whole transaction, and falling on his knees, implored mercy from God and man, for the criminal act he had committed. He was, however, visited with the usual punishment attendant upon such a feature of felony, at the following assizes, held at Winchester.

But, although the New Forest has been for a long course of years the parent of crimes of a like character, nevertheless it may be considered somewhat anomalous in the scale of truth, that the gipsies, who are numerous in these parts, are seldom, if ever, known to trespass upon the possessions of the farmer. These roving tribes are looked upon in the light of the guardians of the housekeeper, rather than as pilferers or plunderers. The farmer feels more satisfied when gipsies encamp near his residence, than when they are away. He is safe from the encroachments of his more furtive neighbours, for the Sybilline fraternity are invariably accompanied by a kennel of restless, impatient curs, which give alarm at the slightest sound of approach on the part of any stranger advancing towards them; these watch-dogs give the signal for an immediate look out, so that no person can escape the vigilant observation of the staff of the camp.

The Lee's, the Cooper's, and the Stanley's have, from time immemorial, visited the different farms in the neighbourhood of their Sylvan encampment, every year. They on their arrival announce their presence by personally waiting on the respective farmers at their residences; generally begging of the latter a few trusses of straw, which constitute the chief of their bed-furniture. This boon is invariably afforded them, and in such good faith is the bond of reciprocal accommodation observed, that if any one of the tribe should, under any circumstances, betray the trust reposed in him, by committing a depredation on a neighbouring farmer who has befriended them with their necessary wants, that individual is, after undergoing a judicial ceremony, reproved by the whole community, and ultimately expelled the tribe he belonged to, abandoned as an excile and an outcast. A singular instance of this kind occurred about twenty-five years ago, at a place called Bolton Bench, in the forest. It happened that a young gipsy boy had been guilty of some act of a nature repugnant to the general understanding of the tribe. He was removed to a spot a short distance from the camp, and was there surrounded by the whole of the brethren, each member having a branch of oak in his and her hand. He was then commanded by the king, who assembled the council, to walk slowly round the human circle, within arms-length of the circumstationed group. During this perambulatory exposure, he received a stroke from the branches that the men and women were provided with. A vessel of dirty water was then soused over him, and he was suffered to beat a hasty retreat from the camp.

Joseph Lee was the patriarchal monarch of the gipsies, on the above occasion. He was 87 years of age when he died, having by *hook* or by *crook*, as the saying goes, lumped together a tidy personal estate; for, according to the accredited reckoning of the gipsy court of "testamentary commons," he left behind him no less a sum than six thousand pounds sterling. He had three daughters, whom he severally named "Faith," "Hope," and "Charity." On Charity Lee, his youngest daughter, being married to a young man of the Stanley tribe, it is stated that he presented to the bridegroom £300 worth of plate and jewellery, and 200 sovereigns, and to his daughter, the bride, four New Forest ponies, and a new saddle and bridle. The gipsies are the least offensive features that are to be met with in the New Forest of Hampshire.

Independent of the great gain that would speedily follow in the wake of bringing this long-neglected waste into a state of cultivation, the government would, at one swoop, sap the foundation of this forest Babel of crime and its contingencies, thereby admitting the flood-gates of civilization to be opened, and the back waters of sound knowledge and moral example to find their way into the hearts of its degraded and depraved inhabitants.

I shall not advance any further remarks on the subject of its being cultivated, but must leave it to the fate of the future. It will I have no doubt, sooner or later, arrest the serious and well-meaning attention of the legislature, and become what it ought to have been some hundred years ago, a useful and remunerative portion of our much neglected agricultural territory. I am, sir, your obedient servant,

22, Albany Street, Regent's Park. D. G.

A SACK OF POTATOES.

[TRANSLATED FROM THE "JOURNAL D'AGRICULTURE PRATIQUE."]

I am indebted to the liberality of M. Decaisne for some bulbs of the Chinese Yam, with instructions how to cultivate it. I have observed that they prepare for the purpose a bed of half-earth and half-dung, and that it is by an enormous quantity of manure that such extraordinary results are obtained in China, by which an individual may subsist a whole year on the produce of ten metres (about eleven yards English).

I formed a bed of ten square metres, and dressed it with stable-dung. Now, we know that the Chinese have very few cattle; but, in compensation, plenty of night-soil, numerous canals which they scour out, and a considerable quantity of aquatic plants. The composts which they obtain from these do not possess the strength of our manure. I therefore reduced my quantity of dung to half a cubic metre for my ten metres of surface, equivalent in value to 4,000 fr. worth of dung per hectare instead of from 12,000 to 16,000 fr. which it would have required had I literally followed the instructions of M. Decaisne.

Whilst making these arrangements, I reflected that this feature in Chinese agriculture was not an isolated case, but that it was the ordinary mode of cultivation, and went to explain the existence of those exuberant populations, condensed on many points of the vast empire. Following up this idea, I prepared, with the same dose of manure, ten square metres for beet root, ten ditto for batatas, and ten ditto for potatoes; and it is of this comparative experiment that I am now about to give you the results. For each of the plots of ground I have expended about 4 fr. 50 c.

The yams produced eight kilogrammes of roots, long and slender, and requiring deep digging to raise them. It is to be hoped that by planting roots more developed by leaving the tubers to grow bigger in the earth a second year, better products might be obtained; for these would be worthless, and evidently involve a loss, except at an extravagant price, which we could not expect to obtain. As to the deep tillage required to obtain the root, I do not regard that as an unnecessary or useless expense, having seen the great value our lands have acquired by the cultivation of madder, their greater perviousness and their more uniform freshness, whilst the trenching required for the yam culture would be still more beneficial. We must not forget that in agriculture we may reckon ourselves rich according to the depth, as well as the surface, of the soil; that to double the product without increasing the extent is more than to be twice rich; and that the proper appreciation of a field will be the cube of its vegetable bed, instead of the measure of its superficies, adapting at the same time the cultivation to the existing circumstances. So far as the yam is concerned, it is an experiment requiring to be repeated; but the plant itself is an acquisition; for if the batata takes the place of the chestnut, the yam is a substitute for the sweet almond, and may from this time be employed in the confection of the choicest dishes.

The beet roots produced 150 kilogrammes of roots, worth three francs, according to the price of hay, which also left a loss on the cultivation.

The batatas yielded 45 kilogrammes of tubers, which were sold in the market for nine francs, which doubled the outlay. But it is necessary to state that the price of all esculents has doubled this year (1857), and that the average value will be little more than five francs: thus, in ordinary years, the batata may cover all the expense. I ought, however, to state in its favour, that my soil is a gravelly one, so that the roots did not fully develop themselves. A similar experiment made in Camargue, by M. de Daunaut, on one of those soils which Arthur Young has denominated *a rich loam*, yielded double the weight of roots that I obtained.

I may here offer some reflections on this culture, which twenty years of perseverance have extended around me. This root at the commencement created only disgust; there is nothing surprising in this, for it is the history of high-flavoured meats, oysters, truffles, even wine, beer, and everything that is excellent. The first instinct repels the novelty; very young children are the first to accustom themselves to it, and from the earliest age learn to distinguish a batata from a potato, the former of which they soon esteem as a dainty. Step by step, as the generation advances, the taste for it is extended. Now many peasants cultivate it; and one of them said to me—"Ah, sir! what a service your batatas have done me; my children will eat nothing but them. They have saved me many sacks of wheat." He had grown them on a rising ground (*éminée*) of only about 600 metres. It is, above all, in the form of pea-soup, with milk for seasoning, that the batata is best appropriated as food. It thus advantageously and economically supplants the chesnut-soup, which constitutes the basis of nourishment in the Haute Cévennes.

Whilst the batata was extolled only by some amateurs or gentlemen — who are always suspected, whatever reason they may have on their side—there was little probability that its cultivation would be extended. Fashions come from the upper classes, and are transitory; customs originate with the masses, become general, and are continued. Gros Jean with his pickaxe has more authority than a whole academy.

One great obstacle to the extension of this culture was the difficulty of preserving the roots. It was thought necessary to put them into millet or bran, or pulverized charcoal; but I found river sand, well dried, and a spot well sheltered from frost and rain, were sufficient for their preservation. Our peasants have also employed glazed frames for raising the young plants, or by sinking panniers or boxes of earth filled with roots in their dung-heaps; where they throw out shoots, which are afterwards planted. Thus, whatever may at first be the difficulties of a cultivation, we must not give up, for they will be smoothed down at a later period. I could give many instances of this.

I now come to the experiment with the potatoes. These yielded 69 kilogrammes, of the average value of 5 fr. 50 c., covering all the outlay with an excess of 1 fr. This would give a profit of not less than 1,000 fr. net per hectare (or £18 5s. 3d. per acre). Nor must it be objected that the experiment was a slight one in extent; for the roots spread out little, and developed themselves upon the spot assigned to them, which would not have been the case with plants with running roots.

Now, I think three important consequences may be deduced from these experiments in favour of intensive culture. Here are products which have, the first year, covered the expense of excessive manuring and careful cultivation. The potato, by its right of seniority, having a known value in our markets from which we may take an authentic average, will become more particularly the basis of the considerations I am about to put forth; and this is the reason why I call this paper "A Sack of Potatoes."

	Azote. kils.
My manure had brought to the soil........	4·00
The potato had taken away of it..........	1·00
The batata................................	0·70
The beetroot	3·96

Thus the beetroot had absorbed the manure; the potato one-fourth of it only; the batata one-fifth.

I have taken no account of the leaves, which immediately unite in the circulation with the manure.

After such a cultivation, there are two courses that may be taken—either to continue it in the same track, and then, with the addition of a quarter of the manure previously employed, we should have a corresponding produce of potatoes, which being charged only two francs of expense, would yield a product of 3,000 francs net per hectare; and the batata would yield a return still more considerable.

But there is another course to take: if we have not near home an inexhaustible supply of manure, we might at once adopt the distribution of crops of Nismes, which during fifteen years would require nothing, and always yield satisfactory products; or that of Orange, which, with the addition of dung, sustains itself as long. Thus the excessive employment of manure applied to roots is that of manure, free of cost, in order to enter boldy into the richest distribution of crops. It is nothing more than an advance for a short time, which will be returned before the expiration of the first year.

I do not conceal from myself the insufficiency of one such experiment, and I mention it expressly that it may be repeated, to induce others to entertain this idea. Next year I hope to be able to extend the importance of it. Unfortunately the agricultural laboratory makes only one experiment in the year; and as time flies, it is necessary to collect all that we can, and to form our sheaf of all that falls into our hands. It is by simultaneousness alone that we can proceed: our furnaces are not always lighted like those of chemistry.

Agriculture is only a vast manufactory, in which we transform the simple substances. These substances are manures, and means of improvement of all kinds; the land is the loom, the man and animals are the power. The manufacturer will find it useless to multiply his looms and his shuttles if the silk and flax fail him; and his vast establishment will become more burdensome than useful. He occupies only an unprofitable space, which proves his ruin, but which would make the fortune of twenty manufacturers, better provided. It is in the transformation, accelerated by the elements in the manufactory working night and day, and the quick returns of capital, that we acquire riches. If upon our fields we unite to the cessation of labour of winter that of summer—the period when vegetation will be in all its energy, and the earth only asks to be allowed to produce with profusion and rapidity—our climate, which seems so well endowed, becomes a cause of impoverishment. This activity, indispensable to large results, can produce only by the agency of water regulated by human intelligence. It is thus that we can almost make an abstraction of extent, and become millionaires with a hundred hectares. Do we not see how some marshes of the sea-coast furnish abundance of horse-litter, by which the vineyards of the Gard, L'Herault, in the Isle of Ré, and in La Charante-Inférieure have developed their riches, and have become the foundation of a manufacture which covers the world with its products?

From the marshes of the sea-coast to the summit of the mountains have been constituted those mysterious alliances which make the harmony of the world. The pastoral system placed at the two extremities, at the birth-place of the rivers and at their mouths, is in communication by an uninterrupted chain, unless factitious boundaries intervene to change the order of the universe. Sometimes, also, the harsh sounds of speculation disturb these admirable harmonies, and a barbarous music mixes itself with the concerts of creation. It is then that the enlightened eye of science and the firm hand of power ought to intervene to arrest ignorance in its operations.

The state of degradation into which our Basses-Alpes have fallen is nothing more than the defect in the equilibrium between the plain and the mountain; and it is in the plain now that we must reconstruct the mountain. Our country unfortunately finds itself in an anomalous state, from which all our efforts should be devoted to its emancipation. L'Auvergne has its sides to the North, and that breeding country finds an opening for produce even to the plains of Normandy. There we see the division of labour between the breeder and the grazier; each fulfils his part, and does it well.

Switzerland, besides having its openings upon a southern country like ours, has at the same time rich pasturages, which owe everything to art and the intelligence of their inhabitants. The Italians have not left unemployed those numerous water-courses, or those splendid lakes which crown their horizon. Immense plateaus, embracing 60 leagues of meadows, have come to complete the system, and lay the foundation of the riches of the two States. Our Alps, on the contrary, reigning over the scorched plains of Provence, ought at once to be the breeding and the grazing country. All that they have done towards grazing was the part of breeding. The cattle are debased, and remain scarce, small, and lean, and yield only small profits. It would not have been thus with them if the connection had been more actively worked between the plain and the mountain. The inhabitants, rich in the number and strength of their cattle, would not have been driven to have recourse to unprofitable works; they would not have ploughed up their declivities, nor demolished their country; we should have had a Switzerland and a Lombardy. It is by the pastoral system extended to our plains, by the construction of lakes which Nature has denied us, or which we have found means to destroy, that our country will attain its proper development, and bring its contingent to that consumption of food which constantly tends to an increase.

The draining of the marshes, therefore, can only be usefully accomplished when we shall be in a condition largely to replace them with water-meadows; they are still the oases of our champaigns. Let us not increase our deserts; let us not extend, by unprofitable cultivation, our agricultural fabrics, which will be more and more deprived of the primary substances which we gather in the marshes in such great abundance. It would be much better to multiply our marshes, to complete them, to add water to them, in which they sometimes fail, and so prevent that half-dryness which is the cause of their unhealthiness. Such are the considerations that I think important, and which we cannot neglect without endangering our position.

My next experiments will, I hope, demonstrate all that the artificial marshes, all that the introduction of the grassy riches of the tropics can add of grandeur to the system which I recommend; and what a brilliant and hopeful career have we before us! In this system the labour of man resumes all its worth, and produces those surplusages which are the life of society, the secret of its strength, the elements of industry, and the source of commerce and all its civilizing consequences. But the deprived manufactory, whose resources we still further diminish—the unoccupied loom, exhibits humanity expending its powers for unprofitable results: it is periodical scarcity, a sick and enfeebled soil, the vermin that attaches itself to misery. The false glare of Paris cannot cast its illusion upon the impoverishment of the country. The financial spirit raised to its highest power, has placed everywhere its aspiring splendours upon the current of the small capitals, even those which are applied to cultivation. Useful improvements are no longer made; the fields no longer attract that look of affection which in itself alone is a virtue, and which, in growing, becomes the love of country. The land is the investment, and is no longer the patrimony, nor the cradle, nor the pride of the family. It is time to return to it those deluded capitals, largely and usefully, in united labours, which prepare the future, and which isolation cannot reach. We must promise, also, to give dividends—this, to a certainty, is for the honour and indispensable duty of the great Syndicate which sums up all our forces.

As I began with the yam, I shall conclude with the sorgho, its travelling companion, brought from the same place by the same enlightened attention. The manufacturer, who may make sugar from it, already obtains from it an excellent brandy. Its abundant seeds may be available in times of scarcity. It is the best food for fowls; and the sorgho yields 80 hectolitres per hectare. We can thus, and by it alone, realize the popular wish of Henry the Fourth, the only king whose memory the people cherish, because he came from a great school, and had breathed our air in his youth, and had understood the instincts of the people. Others have promised the food of England, or the eternal and gross indigestion of the shores of the Atlantic: but he promised that chicken-in-the-pot—that ancient favourite of the Gaulish family, identified with it even in one common denomination, the regret of our soldiers when they quit their Italy.

What do we promise on our part? We will write upon our flag, *Variety!* That's my device. That rapid locomotion which explores the world, which interrogates all climates—that spirit of investigation which is the characteristic of our age, all will concur in concentrating upon our old soil, the young productions snatched from rich countries, and which we shall find means to naturalize. The most humble table shall be covered with new gifts: like that of the rich, it shall enjoy a diversity of food, which is the pledge of health, strength, and contentment. Uniformity, whatever may be the scale that we assign to it, is the worst of conditions: it is the spleen of the North; it is the misery of Ireland; it is the rule and the chastisement of convents, the homesickness of the barracks.

A. DE GASPARIN.

WILD PIGEONS.—There was shot lately in the neighbourhood of Inverness a wild pigeon, in which was found the enormous number of 1,100 grains of wheat, barley, and oats, together with 40 grains of peas; the barley grains predominating. This seems to be no unusual case. There was sometime before that another killed on a neighbouring farm, in which were found 70 grains of peas, along with a very large quantity of the different grains already mentioned, but the precaution of counting was not taken. It is stated, however, that the bird was full to the very bill. Such quantities by a flock of 100 or 200 of these destructive birds must be very considerable indeed in the course of a whole harvest season, particularly since some ornithologists maintain that such are the digestive organs of pigeons, that they are capable of partaking daily three times their own weight of food—a most extraordinary fact, if true. It is needless to add, that the extermination of such creatures must be highly desirable on the part of the farmer.—*Inverness Courier.*

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The Council resumed their sittings, after the autumn-recess, on Wednesday the 4th of November, when a monthly meeting was held: present, Lord Berners, President, in the Chair, Lord Southampton, Lord Portman, Sir Charles Gould Morgan, Bart., Mr. Dyke Acland, Mr. Raymond Barker, Mr. Barnett, Mr. Bramston, M.P., Mr. Caldwell, Mr. Cavendish, Colonel Challoner, Mr. Brandreth Gibbs, Mr. Fisher Hobbs, Mr. Wren Hoskyns, Mr. James Howard, Mr. Lawes, Mr. Lawrence, Mr. Milward, Mr. Shuttleworth, Professor Simonds, Mr. Thompson, Mr. Torr, Professor Way, Mr. Jonas Webb, and Mr. Wilson of Stowlangtoft.

The names of 23 candidates for election at the next meeting were read.

Finances.—Mr. Raymond Barker, Chairman of the Finance Committee, presented the report on the accounts of the Society to the end of the previous month; from which it appeared that at that date the current cash-balance in the hands of the bankers was £665. He also laid on the table, for the information of the Members, the usual quarterly statements.

Expenses.—Lord Portman, Chairman of the Expenses' Committee, reported the progress made by that Committee, and the postponement of their final recommendations until the accounts of the Salisbury Meeting had been audited. His lordship expressed his intention of calling the deliberate attention of the Council, at their next Monthly Meeting, to the general question of the future appointment of Judges for the Country Meetings.

Journal.—Mr. Thompson, Chairman of the Journal Committee, presented suggestions from that committee on the subject of communications connected with that department of the Society's proceedings.

Agricultural Chemistry.—Mr. Wren Hoskyns, Chairman of the Chemical Committee, reported suggestions from that committee on the subject of the Chemical Papers and Transactions furnished to the Society.

Conditions of Machinery.—Colonel Challoner, Chairman of the Implement Cnmmittee, reported a careful examination of the various suggestions received from implement-makers in reply to the circular addressed to them, by order of the Council, in September last. He was glad to find that the greater number of those suggestions were almost identical with the conditions included in previous prize-sheets of the Society. The committee had carefully selected certain portions of the new suggestions communicated to them, having reference chiefly to scientific details of construction, and had submitted them to the consulting engineer of the Society, for his opinion. The committee would make their general report on the subject at the ensuing Monthly Council in December.

Show-yard Admissions.—Lord Portman presented to the Council the joint report of Colonel Challoner and himself, as the Stewards of Admission to the Show-yard at Salisbury. The arrangements made in that department had proved most satisfactory. On the motion of Mr. Thompson, seconded by Mr. Fisher Hobbs, the suggestions for future adoption contained in that report were referred to the Chester Committee; and a vote of the best thanks of the Council was passed to Lord Portman and Colonel Challoner, for the great personal attention they had given to promote the efficient working of the department they had undertaken at the Salisbury Meeting.

Prize-sheets.—On the motion of Mr. Fisher Hobbs, seconded by Mr. Caldwell, the Committees of last year for the preliminary arrangement of the Prize-sheets and the recommendations of their suggestions to the Council, were renewed for the purpose of taking into consideration the Prizes to be offered in the departments of Live Stock and Agricultural Implements and Machinery, for the Chester Meeting of 1858.

Miscellaneous.—A report was received from Mr. Cother, Steward of Poultry at the Salisbury Meeting.—The Council appointed a general Chester Committee, of which Lord Portman, at the request of the Council, undertook the chairmanship.—The December General Meeting of the Society was fixed to be held at 11 o'clock on Friday, the 11th of December.—Mr. Raymond Barker, Chairman of the Veterinary Committee, reported the steps taken by Prof. Simonds in reference to the inspection of diseased cattle in Worcestershire and Warwickshire; and Prof. Simonds was requested to report at the next Monthly Council the nature and result of the treatment he had employed. He was also instructed to visit Sir Henry Muggeridge's flock of sheep in Surrey, and to report upon the inflammatory distemper which Mr. Fisher Hobbs reported had broken out among them.—Mr. Pollen reported from Wiltshire cases of ophthalmia in cows.—Lord Kinnaird transmitted reports on reaping-machines.—Mr. Howard's suggestions connected with details of the Chester Meeting were referred to the General Chester Committee.—Communications on Guano and Inoculation for Pleuro-pneumonia were received from the Foreign Office, and on Guano from the Board of Trade.

The Council adjourned to Wednesday, the 2nd of December.

AGRICULTURAL STATISTICS.—MR. CAIRD'S BILL.

Every one of us has his "hobby." We are all more or less identified with some particular project. One man goes madon the currency. Another is smitten with the charter. With a third the panacea is education, and with a fourth universal suffrage. Here is one hoarse upon church reform, while the sole reliance of his neighbour is still in church and state. Even in so sober straightforward a business as agriculture—as we have had to show often ere now—it is the same. As a rule there is no good farming without—deep draining—tenant-right—long leases—improved machinery—short-horn cattle—liquid manure—or something equally indispensable. There is not one of these but with which we might readily associate its especial champion—gentlemen who have made themselves famous by a cuckoo cry that has been enticing enough to bring others to think and act with them.

We gather from the proceedings of the Loughborough Agricultural Meeting that "Mr. Caird, who has now got into Parliament, is determined to ride his own hobby." His hobby is Agricultural Statistics. We hear this from Mr. Packe, the member for the county, and president of the society. A hearty, earnest country gentleman, who takes a real interest in rural affairs. As we had to show only last week, he gives prizes for good farming, and at this very meeting takes himself the premium for the best sheep. Still, as an agriculturist, or as a friend to agriculture, neither of these can be considered as his hobby. As assuredly as that of Mr. Caird may be advocating agricultural statistics, the hobby of Mr. Packe is opposing them. He takes credit that "it was mainly owing to ourselves the Government Bill of the session before last was abandoned;" while we have further to thank him for the only discussion, on that once popular theme, in the many gatherings of this autumn.

Appropriately enough he re-introduces the subject on his own ground and to his own constituents, in this wise. "In the late session, Mr. Caird asked leave to bring in a bill on the subject, and had given him (Mr. Packe) a pledge that it should not be compulsory, upon which he did not oppose its introduction. That bill had now been printed, that the members of Parliament might have the opportunity of taking the opinion of their constituents interested in agriculture upon it. He was at a loss to understand how—though it might, perhaps, benefit other parties in this country—it could benefit the British farmer. The present was a milk-and-water bill compared with the last, for that required them to give an account of everything they had on their farms, how many quarters of this, and how many quarters of that—in fact, to do what it was impossible they could do, for every practical farmer knew he could not tell what his corn would yield till he began to thrash it. The present bill asked them to state how many acres they had under wheat, how many under barley, how many under green crops, and so forth. For this they were indebted to Mr. Caird, the man who went round as commissioner for the *Times* newspaper, who had now got into Parliament, and was determined to ride his own hobby. As soon as he got into Parliament he asked leave to introduce a bill, which was useless to anybody, because to suppose they could know the quantity of corn in the kingdom from the number of acres under each crop was perfectly ridiculous. He held land in Dorsetshire which would not produce more than six or seven bushels to the acre, and if he sent returns of that to the Board of Trade, together with those from land in this part of the country, some of which yielded six or seven quarters to the acre, of what use would it be? A good farmer, who manured his land, might get twice as much off it as his neighbour on the other side of the hedge, who did not. How, then, was anybody to judge simply by the acreage? He found, however, after having obtained from Mr. Caird a pledge that there should not be a compulsory clause, provisions to the effect that every occupier should make such and such returns; and if he did not make them, the registrar-general, or the superintendent-registrar of the district, was to obtain them by other means, after giving three days' notice. Whenever this bill should be produced in the House of Commons, he should think it his duty to rise in his place, and say that he considered these clauses were compulsory, as giving authority to an official to go over their farms."

If Mr. Caird, whose conduct in the House is pretty certain to be watched with some suspicion, attempts nothing worse than this, there will be but little to fear from him. For our own part, we cannot help thinking that his bill aims at just what is wanted, and all that is practical. It may be "perfectly ridiculous" for a Government to know the acreage in crops of different kinds of grain, although we confess that we scarcely see it in this light. It may be "impossible" to draw any reliable or useful deduction from such information, although we think it might be turned to a very useful account indeed. It is but seldom, so far, that we have been able to support Mr. Caird. His Statistics Bill, however, appears to be rather discreetly drawn. He at once throws over everything that is inquisitorial or oppressive, resting content with an acreage return, in favour of which farmers and farmers' clubs have over and over again declared themselves. Even at the very worst, Mr. Packe only makes it a "milk-and-water" affair.

It must not be assumed that even at Loughborough "ourselves" are all one way of thinking. Mr. Henrick, one of the vice-presidents, "begged to say his views on agricultural statistics were unchanged, although he would not advocate the compulsory principle." Mr. Wild, another of the vice-presidents, also replied as to the possibility of making any reliable estimates:—

"His own conviction was they could not have too much light (Hear, hear), and if they attempted to hide their heads with the idea that they were not under the vigilant supervision of those who would look after their defects as well as their excellences, they would be certainly taken advantage of, and left in the dark. These opinions he had expressed years ago, at one of their quarterly meetings, when the subject was so distasteful to the general body of the farmers, that a resolution in favour of agricultural statistics was not even seconded. Since that period a belief had crept in, that agricultural statistics would, at least, do no harm. Whether they were of any good was a question still mooted. But he was informed that when the corn-factors wished to make their estimate of the probable produce of the harvest, they sent round their emissaries, who estimated the result to a great nicety; and why should they (the farmers) not have the same knowledge of their prospects in the market, where they had to dispose of their produce? If they chose to remain in the dark, the factors would take other means than agricultural statistics to ascertain the probability of abundance or scarcity in the market; and he had heard of factors who, by going into a field and rubbing out the ears, could tell to a nicety what that field would produce. A gentleman, too, acquainted with farming, had told him he could ascertain the produce by the same means, to within a peck per acre. (Cries of "No, no.") He relied upon the authority he had this statement from as accurate; and, if it were so, why should not the results of the harvest be known to themselves as well as to the dealers in corn, who were not so much concerned with the produce of this country as with the likelihood of a profitable return on what they might import from abroad?"

This argument has been used often enough before now, but it is nevertheless a very suggestive one. If it is worth the while of the buyer to obtain such statistics, surely it is that of the seller. And, could there be a fairer way than by the Government supplying them simultaneously with this information. If you will only tell him how much corn there is in wheat, barley, or oats, a farmer ought to be at least equal to any other man in "rubbing out the ears." Of course we are not going to suppose, as Mr. Packe seems to think, that every acre of land throughout the kingdom gives exactly the same produce per acre. But we may make the estimate of a district by looking over the crops, or rubbing out the ears. And who could do this so conveniently or so certainly as the farmer himself? To be sure, there appears, so far, some diversity of opinion as to the late harvest, at any rate in Leicestershire. Mr. Farnham, another of the county members, "believed he could congratulate them on one of the most abundant harvests in the memory of man." The honourable gentleman was at once met with loud cries of "*No, no.*" "He was sorry they dissented from this opinion. He had read it in the public prints, and had heard it from those upon whose authority he could rely. If ever they could be congratulated upon having had an abundant harvest, it was now." Being again stopped with "*No, no,*" Mr. Farnham very discreetly changed the subject. On sitting down, however, Mr. Burrows rose to express his dissent from Mr. Farnham's opinion of the harvest. They had got plenty, but it was not of the right kind; they could not turn it into money, and if they did not make money it was "no go." (Laughter and cheers.) The Chairman, too, "believed much of the corn in the neighbourhood had grown, and was therefore of less value than in former years."

This would go to make the harvest of 'fifty-seven more a question of quality than quantity. There is little doubt as to the latter; although, by this showing, the damaged corn would appear not to be quite confined to the northern or more backward districts.

THE LATE STEAM-PLOUGH PERFORMANCE AT STIRLING.

The production of a steam tilling-machine is so far above the improvement of any ordinary implement in national as well as agricultural importance, that however our great societies may hesitate, or influential individuals neglect, to aid practical inventors with their munificence, we are determined that the Press (as far as we are concerned) shall labour to introduce the new machinery, by the dissemination both of sound views of its capabilities and value, and faithful records of its actual performances. We are anxious, therefore, to guard against rousing wrong impressions in the public mind, either by a coloured statement or an erroneous judgment; and if a too flattering report of the achievements of a steam plough or digger, not borne out by subsequent trial, hinders instead of advancing the subject in the esteem of the farmer, so, on the other hand, hard measure dealt out by a leading authority in agricultural journalism both prejudices the cause at large, and (what is of smaller moment) damages the inventor whose machine may be in question.

In the *Times*, and also in the *Mark-lane Express*, of October 26th, appeared an account of the Stirling trial of Mr. Fowler's steam-plough; the stated results, the estimate of expense, the opinion as to the condition of the soil, and the character of the work done, being confirmed by the *Agricultural Gazette* of October 31st. And the testimony is that, not only was the ploughing performed in a most satisfactory manner, and more effectively and beneficially than horses could have done it, but the saving in expense per acre, all things considered, was from about one-third in ordinary ploughing, to more than one-half in deeper work The *North British Agriculturist*, of October 28th, in its description of the proceedings, differs widely from the foregoing in its figures and measure of approval; and we feel sure our amiable contemporary will pardon us for abiding by our own statements, and venturing to criticise his. He gives "the assumed estimate" of work at seven acres per day, stating that "the time of continuous ploughing was not tested. This is to be under consideration to-day, on the farm of Saughton Mains, near Edinburgh." We know that at this adjourned trial the machine was to try how much ground could possibly be ploughed in one day; but still there was a trial against time on the heavy land at Stewarthall. And as we could not peep into the note-book of the judges, we trusted the oral testimony of competent witnesses that, in three hours, the implement made 27 journeys of 330 yards each, turning four 10-inch furrows, at once; which, without a "ready-reckoner," we find amounts to a trifle over 2 acres, equivalent to 6 acres 3¼ roods, in ten hours. But this was on a stiff clover lea, as the *North British* says, "a clay (carse) of more than medium tenacity," and considered by the farmers of the district to be 3-horse work, worth 15s. an acre. Yet our contemporary takes only "7 acres in ten hours," as the quantity which the machine will plough of average land, where 8s. per acre is "the ordinary estimate" for horse-ploughing. On the wheat stubble, a soil of "deep friable clay loam," where the "ordinary ploughing" was done "at a depth of 6 to 7 inches," a much larger area was turned over. He admits that the "speed generally exceeded 3 miles per hour," and that "from the facility with which the implement was entered at the ends, little time was lost." Well, we can inform him that the implement made nineteen journeys per hour, of 220 to 236 yards each; that is, at the pace of about 2½ miles an hour, including the changings at each end; and as the four furrows took 40 inches' breadth, the extent of ground ploughed was 1 acre per hour nearly, so that an assumption of 10 acres a-day would have been nearer the truth than 7; but say the quantity was equivalent to 9 acres in ten hours. Our contemporary is willing to allow 10s. per acre for the work, and thus we have work performed daily to the value of £4 10s. instead of £3 10s., as his smaller and incorrect quantity makes it. Granting that "ploughing can be carried on 150 days during the year," we have then £675 instead of only £525 (which he arrives at), as the value of the work done annually. He is still worse in his estimate of expenses. We will allow his £140 per annum for interest and tear and wear; but must object to the computation of the daily expenses. He says, "seven or eight men and one horse appear to be engaged in keeping the machinery in operation—this may be estimated at, say 30s. per day." Now, the labour required is that of one man on the plough, one man at the windlass, one man generally assisting, two boys removing the rope-porters, one man and horse water-carting, and the engine-driver, or a total of five men, two boys, and one horse; and it is not fair to add Mr. Fowler's foreman or superintendents, who were present in the field at the public trial, to direct proceedings, and afford information. And then, why put the cost of the "seven or eight men and one horse" at 30s. per day, seeing that the salaries and travelling expenses of these particular men form no guide for the payment of a farmer's engineer and labourers? Twenty shillings is quite sufficient for the labour really needed in practice. Our contemporary reckons the consumption of coal, oil, &c., at £1 per day: a most excessive estimate. For, even supposing the ten-horse engine to have been worked up to fourteen-horse power; this, with slovenly firing, burning 7 lbs. per horse-power per hour, would amount only to 10 cwt. Fuel is cheap in the district; but still we may say 10s. for coal and oil. We thus get 30s. daily expenses; which in the *Times* report was taken at 35s. Multiplying the daily expense by the 150 days worked, and adding the £140 for tear and wear, the annual cost is found to be £365; whereas by our contemporary's figures it is no less than £515. By thus understating the quantity of work done, and over-estimating the expenses, he brings out "the relative expenditure of horse and steam ploughing at what may be considered an equality." He goes on, however, with other items in the account, which turn the balance of economy against the latter; saying, "But no allowance has been made for incidental expenses; and, as the data we have taken are moderate (!), a sum not less than £50 must be added. Besides, the wages of the engineer and the men generally required for the working of the plough, when not so engaged, must also be taken into consideration. The engine, when not engaged in ploughing, may be perhaps advantageously turned to other uses, such as moving the thrashing-machine, &c." We do not agree to this £50 for "incidental expenses," beacuse we think the £140, which is something like 20 per cent. on the first outlay, will cover all; but we will allow it as the cost of shifting the machinery and tackle from field to field, which for 150 days' ploughing, in averaged-sized inclosures, will require to be done about seventy-five times, occupying—say, half-a-day each time. Curiously enough, our contemporary has forgotten all about this item in the calculation; which would have enabled him to show an actual pecuniary loss from employing the steam-plough instead of the horse-plough. But, according to our own figures, adding this £50 to the annual working-expenses already stated, we have a total cost of £415 for work valued at £675; that is, there is a saving of about 40 per cent. upon the cost of ploughing by horse-labour—the machine having ploughed 1,350 acres in 150 days (or 187 days with the removals), at 6s. 2d., instead of 10s. per acre. Suppose stoppages do sometimes occur; and let the value of the ploughing be taken at only 8s., when the usual price in the district was there stated to be 10s. or 12s., and every farmer in the trial-field considered the expedition and extra pulverization and absent trampling made it worth much more—and still the facts show a margin of economy in favour of steam.

Money-saving however, is, not the sole advantage, or so important as the power of striking-off a great deal of work in a very little time; and being thus able to accomplish the ploughing of our whole "wheat-seeding," or give a furrow for mangold or turnips, all in a few days. The prime cost of the Stirling Steam-plough, some *£770*, would scarcely buy horses enough to turn over the same extent of land per day; and it would be ruin to the farmer to feed such a team when the season of work had passed over. But the steam-plough, as a means of hastening our tillage during proper weather, or in a catching time, brings us independence, and certainly without any such accompanying sacrifice or outlay. Upon the value of the machinery upon a clay soil, where horses injure by trampling, and for performing a deeper and more fertilizing order of work than is at present practised, we shall not now dwell.

We conclude with some remarks on the judgment pronounced by the *North British Agriculturist* upon Mr. Fowler's invention.

Passing over some slight inaccuracies of description, take the following: "The wear of a wire-rope coming in contact with a soil on which are loose stones or flints, is so great that the expense involving a renewal of the rope may be considered as fatal to the economical application of this system of steam-ploughing." But we cannot so easily concur in this off-hand abandonment of the rope-and-windlass system; seeing that this wear is confined to, at most, one-fourth the length of rope, as it follows the implement "slack," and hanging down between the rope-carriers. Mr. Fowler having had long and extended experience of wire-rope for the drainage implement, as well as the plough, considers that it will last over thousands of acres, and that the sum we allow for "tear and wear" includes the renewal of rope; and Mr. Smith's arrangement of tackle is also being employed, without fear on this head, by many well-satisfied farmers. Our contemporary comforts us by declaring that, "if by any process *wire* ropes could be formed of *material on which stones could not act*, there would be a probability, amounting almost to certainty, of a partial adoption of Fowler's principle to the cultivation of the soil." He tells us that "the Marquis of Tweeddale's and Lord Willoughby d'Eresby's experiments with stationary engines and wire-rope moving the frame-plough proved the system to be inapplicable, from the great tear and wear; and Fowler's method is only a fuller development of the principle first adopted by the Marquis of Tweeddale, and afterwards by Lord Willoughby." It so happens that Lord Willoughby used chain instead of rope; and as for the experiments of the Marquis, we wish our contemporary would favour us with a description of the apparatus, and the expenses and results of working it. We have an impression that the ploughing was effected at less cost than by horses, but that the machinery was defective in some of its details. Mr. Fowler's "fuller development" may have just overcome all that the noble Marquis failed in; and respecting the "first adoption of the principle," we suppose Mr. Heathcote and Mr. Parkes were its progenitors more than 20 years ago.

Our contemporary thinks that the steam-plough was all very well on the alluvial flat at Stirling; but doubts its "applicability to ordinary soils and situations." For the safety of the tubular boiler, the engine requires to move forward almost on a level; otherwise (as our contemporary expresses it), "*the pipes* are liable to burn, generally followed by an explosion when the water returns to the red-hot pipes." And if such level lands are scarce, so also are fields free from "the insurmountable barrier" of loose stones. But let him remember that the clays and great corn districts of England, as well as tracts north of the Tweed, most in need of good tillage, are precisely the levellest and least stony; and besides, the engine can be adjusted to travel on very considerable inclines.

He says, "From the general applicability of the situation for the exhibition, a very strong feeling in favour of the plough was evinced;" naïvely adding, "this was almost a necessary result, as the ploughing was well executed, both as to regularity of depth and width, straightness of furrow, &c., *being what only expert ploughmen with good horses could have executed.*" The report of the judges, he expects, will be "favourable. Whether the judges will recommend the awarding of a sum to Mr. Fowler *for his appearance in the trial field*, or whether they will report that the conditions of the premium have been fulfilled, remains to be seen. *The latter result, however, we do not anticipate.*"

The "conditions," we suppose, are that the machinery shall be a "successful application" of steam (or water) power to ploughing or digging: our readers are able to judge whether or not Mr. Fowler is entitled to the prize.

The most satisfactory commentary, however, on the trial at Stirling has reached us since this paper was written. Subjoined we give a letter from Mr. Hall Maxwell, announcing that the conditions have been fulfilled, and that the Highland Society has awarded its full premium to Fowler's plough.

THE STEAM-PLOUGH TRIAL AT STIRLING.

Sir,—We have this afternoon resolved to award our premium of £200 to Mr. Fowler for his steam plough; and as he seems to attach importance to the immediate publication of this award, I have sent a short telegraphic message to you communicating it. We may not hold that Mr. Fowler's machine is faultless or complete; but it did its work in such a manner as to entitle him to all the encouragement and reward our premium can confer. The report will appear in our January *Transactions*.

Yours truly, J. Hall Maxwell.

Highland and Agricultural Society of Scotland,
6, *Albyn-place, Edinburgh, Nov.* 6, 1857.

THE WANT OF COMPETITION FOR THE HIGHLAND SOCIETY'S STEAM-PLOUGH PRIZE.

Mr. Fowler was the sole competitor for the Highland and Agricultural Society's steam-plough prize. Where was Mr. Boydell? Was he afraid that his tremendous power of draught, and his amazing facility for traversing the difficult surface of a field, would not be appreciated by the Scotch farmers unless his ploughing were done better than we have yet seen by the defective implements he has hitherto worked? Where was Mr. Smith, of Woolston? Had he rather work out, on his own farm, a system of culture with subsoilers and scarifiers, and show the world results on a large scale, than simply contest for a public prize? Where was Mr. Williams, with his semi-steam semi-team arrangement for ploughing? Where was Fisken's apparatus, that gave such good promise last year? Where was Mr. Usher's locomotive engine, with its rotary ploughs? Is the company formed to carry out this invention to be no more heard of? Where was Mr. Crosskill, with the new Romaine Digger? Where were the four or five other steam-cultivator schemes, entered in the Salisbury catalogue, but not yet forthcoming? Perhaps the terms of the offer of the £200 were such as to exclude all machines which do not strictly plough. Perhaps the shy and scanty style of advertising, the time and place of competition, may account for some of the non-appearances.

But if these inventions were not in the field on this occasion some of them have displayed their capabilities in other places, and an omnipresent press can collate their performances with those which have been so brilliant at Stirling.

Many trials of the "traction engine" having been reported, we need only say here that various manufacturers seem to have taken up the "endless railway" in earnest,and the latest advance we know of is an engine constructed of some 16-horse power, mounted upon two large wheels, with a single steerage wheel in front, a clever arrangement of friction boxes, allowing both the main wheels to be driven while turning a curve. On a common road this engine, 10 tons in weight, dragged 25 tons weight of carriages at the pace of a horse's walk, by itself turning within a circle of 30 feet diameter. We believe it to be clear that ordinary portable engines may be made to propel themselves along roads with very moderate gradients, without danger or injury to the boiler tubes; and, thanks to the "endless rail," we shall soon see cartage of various sorts transacted on our farms by steam-power.

Fisken's ingenious method of conveying power from a stationary engine to a travelling implement has not been sufficiently laboured upon in its mechanical details, and is waiting, we believe, to be brought out in an improved form. Still, last year, the committee of the Stirling General Agricultural Association reported very favourably respecting it. The land on which it was tested at Stewart Hall was a clover-lea, carrying a second crop some eight or ten inches high, the soil a clay of medium tenacity. The engine was of five or six-horse power, the endless-rope was driven with a velocity of 30 to 35 miles per hour, and the field of a triangular form, so as to try how the ropes would adjust themselves to different lengths of work. The character of the ploughing was quite satisfactory, though the constructive details of the machinery were defective; so that the Committee highly approved of the principle of action, especially for its "general applicability"; and five of the most extensive arable farmers connected with the Association agreed to have portions of their farms, varying up to forty acres in extent, ploughed during the winter at the price of 8s. 6d. per acre. Undoubtedly the principle of employing a light rope running at a high velocity will be used on very hilly land to drive the rotary digger, whenever this shall establish itself as an effective tool. But, for making the farmer's present portable-engines available for steam-ploughing, we have Mr. Williams' method of affixing the windlass to the engine by a timber framing, both travelling upon their own wheels, and motion being communicated by an endless pitch-chain. We have heard of another scheme, already manufactured, in which an ordinary engine is simply run up on to the top of the windlass, and travels with it as required; and Mr. Fowler has an arrangement by which the engine is placed between two strong beams, forming part of the windlass-frame, and is supported partly by one pair of its own wheels and partly by the windlass. Many farmers will prefer this form of machine to that in which an entirely new engine, combined with a winding-apparatus, is required; partly because the first outlay is less, and principally because of their already possessing an engine which is not sufficiently engaged in thrashing and other work. A considerable force of horses being requisite to pull this machinery from field to field, the more expensive engine, which is able to propel itself on ordinary roads, is of course advisable for purchasers who meditate the performance of contract-ploughing throughout a district.

The great assistance of a steam-engine able to cultivate, even though it may not be applied to the plough, is being very extensively felt in consequence of the adoption of Mr. Smith's apparatus in many parts of the kingdom. Scarifying of a deep and most effective kind is accomplished at the rate of six or eight acres a day for a total expense of 7s. 6d. per acre, while all the horses on the farm are simultaneously engaged in ploughing or other tillage, so that an unprecedented breadth of ground is cleaned and prepared within the critical time between the periods of bad weather. After a little experience, no doubt, the farmers becoming independent with the new power, will follow Mr. Smith's example, and sell off a portion of their teams.

As far as ploughing is concerned, we last week gave the famous result of the Stirling trial of Mr. Fowler's machinery—every way satisfactory both as to the great quantity of land turned over, the economy of the operations, and the admirable character of the work, both in common ploughing and deep trenching. On a future occasion we shall have still more to say respecting the great point which has been now gained, and the ample and reliable data as to power required and expenses involved, which we are now in possession of. We would also intimate that the rotary cultivator has now come before the public in an effective shape, and, thanks to Mr. Crosskill as well as to Mr. Fowler and other able machinists, our readers may prepare for steam-power tillage on an extensive scale, and at a period no longer "looming in the distance."

THE CONSTRUCTION OF THE MODERN PLOUGH.

At the conclusion of our second article of the present series we proposed to examine the construction of a plough which, without ignoring the acknowledged merits of implements of other makers, might be taken as a type of the modern implement.

The various parts of the plough which we have selected for description may be described under the heads—the beam and its fixings, the body, the mouldboard, and the share. Generally, the plough may be described as having the beam and the stilts or handles of wrought-iron, forged in one piece, to which is secured, near the middle of their length, a cast-iron body, carrying the sock, or share, and the mouldboard, or turnfurrow, these being preceded by the coulter, attached in a peculiar manner (hereafter to be described) to the beam; and between the head, or bridle, a skim-coulter, or miniature-plough, is suspended from the beam. The beam further carries two wheels in advance of the skim-coulter: one the land-wheel, 13 inches in diameter, and the other the furrow-wheel, a few inches in advance of the land-wheel, and the diameter of which is 21 inches. To the extremity of the beam, the bridle or head is attached, which supports the draught-chain, or rod.

The extreme length of the beam (including in this the beam proper, and the stilts or handles) is 10 feet 9½ inches. The handles widen out from the beam at equal angles, and are strengthened by three straight and one curved stays; the extremity of each is provided with a wooden handle. The body of the plough, or "frame," if cast-iron, is made with a check or recess to receive the beam, to which it is attached by three bolts. The length at bottom of the body (where it rests on the sole, or slade) is 25 inches; the length of the sole (which is secured to the body by two bolts) being 31 inches, or six inches longer than the frame. The forward extremity (*a*) or head of the body is twisted or curved, to correspond with and receive the curved part of the mould board which rests upon it. This forward extremity of the body (*a*) is not solid, but is hollowed on its lower side, to receive the wrought-iron bar, or rod, called the "lever neck" (*b*), which supports the sock, or share. This rod is tapered at the point, and provided with two curved projections, which fit into corresponding notches in the forward extremity of the body (*a*); these notches act as fulcra, in which the rod (*b*) may be moved, the extremity moving vertically. The sock-rod (*b*) extends upwards at an angle to the line of the sole, and its extremity passes through a long slot, or aperture, made in a curved bracket (*c*), or projecting part, bolted on to the back part of the body. A washer (*d*) is also provided, through which the extremity of the rod (*b*) passes; the inner edge of this, and the outer edge of the bracket (*c*), being provided with corresponding indentations and projections, which fit into each other. The two are brought into close contact with each other by a nut on the screwed end of the rod (*b*), which is thus maintained in any desired position. The place of the washer (*d*) on the bracket (*e*) can thus be altered, and the end of the rod (*b*) made to rise or fall correspondingly. Parallel to, and above this rod (*b*), another rod, but of smaller diameter, called the "share-hook" (*e*) is placed; one end of which passes through, and is secured by a nut outside the washer (*d*). The lower end is turned up for a short distance at right angles, forming a species of hook or catch, which enters into a hole in the share. By tightening the nut at the other extremity of the share-hook the share is pulled upwards and secured tightly to its seat in the end of the lever neck (*b*). The rising or lowering of this lever neck—the manner of doing which we have already described—gives the point of the share greater or less "pitch" or inclination, as the share wears, or as the condition of the soil to be cultivated may require. The management is such that it admits of the easy removal of substances as couch, which prevent the free action of the lever.

The sock or share is of cast-iron, cast in a metal mould, which gives a very hard surface. It is provided with a sock on its under-side, to receive the tapered end of the lower neck (*b*).

The coulter is fastened to the bottom by a wrought-iron clip, which by being made moveable within a range of five inches along the beam, alters the angle which it makes with the sole-line of the plough. The upper end, or stem of the coulter, is made circular, and passes through two eye-bolts, one of which is placed above and the other below the beam; the ends of these pass through a plate, the ends of which are turned in, or kneed, at right angles; these ends having circular notches, which embrace the coulter stem. This plate is upon the opposite side of the beam to that on which the eye-bolts and coulter are placed; and by tightening up the bolts the whole are bound firmly together. The circular stem of the coulter admits of the easy adjustment of its edge to the cutting of the furrow-slice.

Preceding the coulter is the skim-coulter. The office of this is to pare off and turn into the furrow, when ploughing lea or stubble, the herbage, &c., on the top of the furrow-slice, so that when this is turned over by the mould-board no vegetable matter is left untouched, again to take root, but is completely buried. The skim-coulter is fastened to the beam by a wrought-iron clip, which embraces the stem. The clip is provided with screwed tails, which pass through a plate on the side of the beam opposite that at which the stem of the skim-coulter is placed; one of the tails is brought up by a nut securely against the beam. The "drag-chain," when used, is a member of the regular coulter; is attached to the bridle of the coulter, which is provided with a small weight or roller at its extremity. It is made to lie across the furrow-slice; so that while this is turned over, it drags in all stubble, &c., &c., which may lie on the edge, and buries it in the soil.

The stem of the land-wheel, which precedes the skim-coulter, has a vertical adjustment in the square eye of a loop screw or eye-bolt, which is secured to the beam by a nut. The furrow-wheel, which is nearly opposite to the land-wheel, has two adjustments—a vertical, to correspond with the vertical adjustment of the land-wheel, and a horizontal, corresponding with the adjustment of the breadth of the furrow-slice. This horizontal adjustment is obtained by giving the axle a square continuation, which passes through and slides in a square eye-hole, attached to the bottom of the wheel-stem. The axles of the wheels are capped at both ends, which prevents the entrance of extraneous matter and the loss of oil. The friction is therefore lessened, and the longer wear of the axles secured. The draught-chain is attached at its inner end to the beam by a bolt, and its outer end passes through and is supported by an eye-bolt, at the bottom of a vertical bar, which is supported from the head or bridle: this bar passing through an eye-hole at the end of the bridle is adjustable at any desired height.

To the extremity of the beam, two iron plates, with circular segmental ends, are riveted: these segmental ends are provided with a series of apertures. The head or bridle is a double strap, between the fork of which the beam is placed; the ends of the strap are provided with eyes, and are jointed, by a bolt passing through them all, to a bolt-hole in the beam. The further end of the strap, which slides over the segmental plates above alluded to, is provided with an aperture, by passing a pin through this and the corresponding apertures in the segmental plates. The draught-chain, which we have described above as passing through the eye of the vertical bar attached to the bridle, is moved nearer to or further from the land-side of the plough.

The mould-board, which remains to be described, is remarkable, when contrasted with some of the older forms, for its great length and the beautiful contour of its curved surface, over which the furrow-slice, from its being first cut till it is turned over, and finally deposited, travels at a uniform rate. It is made either of cast iron or of steel plate, and is in length 41 inches, and in height, at its maximum part, 13 inches. A bolt attaches it to the head; a second connects it to a small bracket, attached to the bracket through the slot of which the upper end of the lever-neck passes; a third, near the back, attaches it to a wrought-iron stem, supported by the right-hand stilt or handle. The mould-board is capable of adjustment, turning on the bolt in front as on a centre, the two other bolts passing through slots large enough to admit of the play required. The lower edge of the mould-board is provided with a "rest," attached by two bolts.

Having thus described the arrangement and construction of the parts of a "modern plough," we are prepared to investigate the principles of its operation, with a view to determining whether its results are or are not such as the necessities of an improved mode of cultivation require.

PLOUGHING OLD GRASS FIELDS.

Sir,—In the last number of your excellent Journal I observe some very sensible remarks which were made by the Earl of Lonsdale at a late meeting of the West Cumberland Agricultural Society. His Lordship says, if the Whitehaven Agricultural Society will offer a prize for the best-managed farm, he will follow it up by giving a premium for 40 acres of the best grass *free from weeds, thistles, and dockins;* "for of all the beautiful things in nature," his Lordship adds, "to my perceptions, a *clean grass field* is amongst the first: and what is perhaps more to the purpose in these times, I believe it to be quite as profitable as any other species of farming." These are very sensible observations; for in travelling over the country, as I sometimes do, very few old grass fields are to be seen but what are covered with thistles, nettles, dockins, and every abomination. The blame of this, however, cannot be laid at the door of tenants generally; for where there are yearly holdings, not one old grass field dare be touched without leave of the landlord. When a lease of a farm is granted, however, the case is materially altered, and such an arbitrary and obscure condition ought to be entirely expunged; yet how many antiquated, illiberal landlords, as well as agents, still insist that old grass land (and it matters not how foul with rubbish it may be) shall not be ploughed without leave! thereby constituting themselves the sole judges of what is proper to be done, not even allowing the tenant to have any voice in the matter; yet a heavy rent, it may be, is exacted for every square yard of the farm, while the tenant is allowed control over only part of it, and, before he can break up an old bad-feeding grass field, he must go, cap in hand, to his landlord or agent, and ask leave to exercise his own judgment, and to break through an absurd rule founded in ignorance and prejudice. Everyone knows that an old grass field, if *perfectly free* of weeds and rubbish, and in a proper feeding state as to the quality of the grass, will remunerate a tenant as well, or probably better in grass than in producing any other crop; but a tenant ought by all means invariably to be allowed to judge for himself what is best to be done without being hampered by his landlord. Should a farm be situated in the neighbourhood of the proprietor's residence, it may be natural for him to insist that any old grass fields shall not be broken up without leave, because he may be anxious that such fields should continue to have a park-like appearance. But when a farm may be miles from the residence of the proprietor, what difference, I would ask, can it make to him what fields are ploughed, and what fields are not ploughed, providing the tenant is otherwise fulfilling his conditions by farming well and paying his rent? For when he has control over his whole farm, he is certainly in a position to pay a higher rent than when he is fettered by such absurd conditions as some illiberal landlords and primitive agents impose. Some antiquated proprietors and agents say that tenants, even although they have leases, ought not to be allowed to plough up old grass land without leave, because for a time they may make £20 or £30 per acre yearly, and afterwards the farm is of less value than it was before. I believe such an argument to be downright nonsense and preposterous. But suppose they can make the half of that sum—suppose they can make say £15 yearly per acre by exercising their own judgment in ploughing their fields, to my mind there cannot be a better argument why they ought to be allowed such liberty, for then they can surely afford to pay a better rent. A clever tenant ought assuredly to know as well as either landlord or agent, whether fields in corn or grass will pay him best, and therefore he ought not to be trammelled by either in the exercise of his own judgment. Some covenants which have been longest in favour among landlords are so short-sighted and absurd that they incurred the reprobation of the justly-celebrated Arthur Young at a time when modern improvement was only dawning, and when few of the chief grounds of objections to conditions had come to light; and several of these covenants are so argued and demolished in his 'Farmers' Guide,' published in 1770, that they ought long ago to have buried themselves among the obsolete things of the old-world history. One of these conditions is, that the tenant must not break up any old grass land. But many fields are overrun with brambles, thistles, dockins, ferns, nettles, and all kinds of rubbish, and although cleared, grubbed, and manured, would only bring forth other varieties of weeds, or put on a new face of worthlessness; and ye these fields must not be ploughed! Or, fields which have been laid down by the landlord or by a former tenant as permanent pastures, may contain a large proportion of short-lived grasses, and speedily become of little value per acre; and yet they must not be touched! Or, soils which for seven, eight, or ten years yield the finest crops of grass, may be of such a nature as afterwards to lose their graminiferous fertility, and be incapable of re-acquiring it, except through the alternation of tillage; and yet they must not be subjected to the plough! Well might Mr. Young, in his excellent book, justly exclaim, "*Such a covenant is absurd and intolerable.*" Landlords and agents, with their absurd and primitive notions as to the conditions of a lease, ought to read and study Mr. Young's excellent book; for, although written ninety years ago, they may derive some useful information from it.

My landlord, an excellent man, has no such absurd fetters in his leases in regard to old grass; for although all his tenantry are bound to a certain mode of cultivation, not one is restricted as to what fields he is to plough, or what to let alone. Everyone is properly permitted to exercise his own judgment until within the last five years of the end of his lease, when he is bound not to plough any old grass without leave. I believe, were our landlord or agent to propose to any of his numerous tenantry at the commencement of a lease to restrict them in exercising their own judgment as to breaking-up certain fields which have been at one time under the plough, both would be reckoned more fit for an asylum than going at large.

I am, Sir, yours very respectfully,
A NORTH COUNTRY FARMER.

October 28th, 1857.

THE CUNNING OF THE RAVEN.—In the narrative of the Arctic voyage of Captain M'Clure, of the British Navy, is the following story of the two ravens, which became domiciliated on board the Investigator. The raven, it appears, is the only bird that willingly braves a Polar winter, and in the depth of the season he is seen to flit through the cold and sunless atmosphere like an evil spirit, his sullen croak alone breaking the silence of the death-like scene. No one of the crew attempted to shoot the ravens, and they consequently became very bold, as will be seen from the following story:—"Two ravens now established themselves as friends of the family in Mercer Bay, living mainly by what little scraps the men might have thrown away after meal times. The ship's dog, however, looked upon these as his especial perquisites, and exhibited considerable energy in maintaining his rights against the ravens, who nevertheless outwitted him in a way which amused every one. Observing that he appeared quite willing to make a mouthful of their own sable persons, they used to throw themselves intentionally in his way, just as the mess-tins were being cleaned out on the dirt-heap, outside the ship. The dog would immediately run at them, and they would fly a few yards; the dog then made another run, and again they would appear to escape him but by an inch, and so on, until they had tempted and provoked him to the shore, a considerable distance off. Then the ravens would make a direct flight for the ship, and had generally done good execution before the mortified-looking dog detected the imposition that had been practised upon him, and rushed back again."

SEWAGE OF THE METROPOLIS.

SIR—In my letter of the 21st of Sept. I pointed out a district of the metropolis which has suffered perhaps more than any other, both in a pecuniary and a sanitary point of view, from the neglect of the Commissioners of Sewers. It is, indeed, a monstrous thing that a course of positive deterioration should be allowed to go on year after year for so long a period, when not only a staff of officials are in existence to remedy the evils complained of, but an amount of money has been actually levied upon the inhabitants fully adequate to their removal, but from which they derive no benefit whatever; the district being now in a far worse condition in every respect, so far as its sanitary arrangements are concerned, than it was when, thirty years ago, I first became acquainted with it. Leaving this question to the consideration of your readers, I shall now take up the practical part of the subject, or the way in which it is proposed to dispose of this monster nuisance which is annually consigning hundreds of victims to premature graves.

There are two plans at this time before the Commissioners of Sewers. The first is by Mr. Bazelgetti, and embraces the construction of a tank in the Essex marshes, on the bank of the Thames opposite Erith. This reservoir would comprise an area of ten acres in extent, and fourteen feet depth, containing when full upwards of six million cubic feet, or thirty-eight million gallons of sewage; and Mr. B. estimates that it would be half filled in dry, and quite filled in moderately wet, weather, *every tide;* thus being partially filled and emptied twice in every twenty-four hours. This plan, however, independent of serious objections in itself to which it would be liable, has been met by the most determined hostility of the residents of Erith, to whom the nuisance would be intolerable in certain states of the wind or atmosphere. The deposit (without artificial precipitation) would be about 1,000 tons to every inch of depth, and would comprise the most fetid of the materials of the sewage, which in hot weather would rapidly putrify, and emit an effluvium that would render a residence in its neighbourhood intolerable. This plan, therefore, is not likely to be approved by the Commissioners, who will be compelled to have some regard to public opinion in a matter of this kind.

The second plan is by Mr. M'Clean, and is to the following effect. After conveying the sewage to West Ham by (as I conclude) a covered conduit, he proposes to continue its course by open cuttings to the valley of the Crutch, a small stream in Essex; and from thence to the sea, so as to avoid contaminating the Thames, which is an object that must be considered. It would, however, equally ignore the commercial part of the question, by disposing of this immense body of valuable material in the most summary manner. It is, in fact, the enormous quantity of the sewage that renders it so difficult to manage or cope with; and here again the folly and negligence of former commissioners appears in a striking point of view. They have allowed the metropolis to grow to such an extent, before taking the subject into consideration, that the sewage has become perfectly unmanageable by ordinary means, and requires an outlay and works to get rid of it that now appal them. We fortunately have men still in the country with minds and means large enough to grapple with even the sewage question of the metropolis.

Desirous of preventing the waste of so much valuable property on the one hand, and with an eye to its commercial importance on the other, Sir S. M. Peto has proposed to the Commissioners of Sewers to take the management of the sewage after it has passed from the city sewers, and to furnish the capital to the amount of £600,000, for the construction of the necessary works, on payment of four per cent. per annum interest, *and the manure.* By this plan the Thames would be saved from pollution, as upon Mr. Bazelgetti's proposal, and the sewage would be economized and rendered productive instead of being discharged into the sea, as Mr. M'Clean's plan would involve. It is proposed to form a company for carrying out the plan of Sir S. M. Peto, and it is to the calculations, &c., which have been made, that I shall now direct the attention of your readers.

With regard to the value of the sewage, it has greatly increased of late years by the extended use of water-closets, by which all the excretæ of the inhabitants are conveyed into the main sewers. According to Liebeg* the average amount of the liquid and solid excreta of a man is 1½lb. per day, or 547lbs. per year, in the proportions of 486lbs. of the former to 91lbs. of the latter. The whole contains three per cent. of nitrogen, or 16.41 lbs. per year; but taking the average of the population, young and old, the quantity of nitrogen will probably not exceed 12lbs. per head per annum. Mr. Laws has ascertained that the average quantity of dried matter is about 46lbs., which is just half what Liebeg allows to a man. Apportioning, therefore, 8lbs. of nitrogen to the solid, and 4lbs. to the liquid, part, we bring the result to three-fourths of the average of a man.

Besides this, there is a part of the excreta of cattle, sheep, horses, pigs, &c., with the blood and offal of the slaughter-houses, the refuse of manufactories, the vegetable garbage of the markets, and a hundred other sources, from which the amount of nitrogen is increased to 20lbs. per annum for each of the inhabitants, making, in round numbers, an aggregate of 22,000 tons for the two-and-a-half millions of the metropolis. The value of this, according to Mr. Nesbit, is not less than from £1,500,000 to £1,800,000 sterling; the mean of £1,650,000 being at the rate of £75 per ton.

Fresh farm-yard manure, according to Dr. Voelcker, contains .74, or nearly ¾ per cent. of nitrogen, or about 16½lbs. per ton. The sewage, therefore, of London probably contains as much nitrogen (50 million lbs.) as three million tons of farm-yard manure, which is sufficient to dress 200,000 acres at a rate equal to 15 tons of such manure per acre. It is proposed to apply this nitrogen at different dressings, by which it would be more quickly absorbed by the land; and thus a far less loss would accrue from evaporation than in a top-dressing of farm-yard dung, which always loses a large portion of its ammonia, as may be proved any day by the smell. The proportion, therefore, retained in the soil from sewage will be greater than from farm-yard manure. It has never been accurately ascertained, we believe, what is the maximum quantity of nitrogen a wheat crop would take up without super-saturation. An experiment was made at Manchester by which it was found that by applying up to half a ton per acre of guano the production of grass was increased, but that beyond that quantity it was diminished. This allows about 150lbs. of nitrogen per acre as the maximum for one crop of grass. It is possible, however, that if the excess of guano had been applied at different intervals, and in a liquid form, it might have had a different effect. And with regard to its application to cereal crops, we know that it is the basis of gluten, and that the proportion of that substance in wheat varies from five or six to thirty-five per cent., according to the kind of wheat, the quality of the soil, or the state of its cultivation. Both the number of ears and of grains they contain, as well as the quantity of gluten, increase, according to the quantity of nitrogen imparted to the soil by the manure. We find the crops on similar soils varying under different treatment, from three to eight, and even ten quarters per acre and the quality of the grain is equally affected by it. We can therefore scarcely conceive of a wheat-crop being super-saturated with an over-dose of nitrogenous manure; whilst a deficiency of that chemical in any dressing, *however rich in other respects*, will be sure to manifest itself at harvest in a disproportionate abundance of straw, compared with the yield of grain.

**Agricultural Chemistry*, p. 185.

The plan of the projectors of the proposed company for the disposal of the sewage, is to distribute it by force-pumps to the district around the spot where the reservoir is constructed. It is computed, however, that within the range of the valley of the Crutch, to which Mr. M'Clean's plan refers, there are about 300,000 acres on a level with, or below, the conduit, to which the sewage could be conveyed without pumping, whilst a much larger breadth could be reached at a moderate height. The greatest difficulty the company will have to encounter, will probably be to induce the resident farmers to use it, and it will require much energy in the managers to introduce it generally. The Essex farmers are not by any means the most forward to adopt any new system, and it will be only by degrees, and upon the most palpable demonstration of its utility in yielding an equivalent, that they will invest money in a new enterprise. This subject, however, has been so much and so long discussed, and its merits are now so well understood, that we cannot conceive any long period will elapse, after the establishment of the works, before the sewage will be eagerly sought after by those within reach of its application. We believe that the plan of the projectors embraces the taking on leases of as much land as they can procure, both with the view of demonstrating practically the value of the sewage, and also as a profitable investment of capital which it assuredly would prove under a judicious management.

It is estimated that north of London, to which the present views of the projectors are alone directed, the quantity of nitrogen contained in the sewage of the two million inhabitants amounts 33½ million lbs., which will allow at the rate of 166lbs. per acre on 200,000 acres. This is nearly four times as much as is commonly taken up by "a crop of wheat of 30 bushels per acre, or of hay of 1½ ton per acre; or three times as much as a crop of turnips of 20 tons per acre, or of potatoes of 6 tons per acre." It is considered that such a dressing would produce probably double crops of every kind, especially grass, which, at Edinburgh, Rugby, and other places, has yielded 70 or 80 tons per acre, according to the statement handed to me. I have myself known crops of mangel-wurzel of 70 tons per acre grown in the neighbourhood of Dublin, by high farming and careful cultivation.

There will, undoubtedly, be a large excess of sewage for some time, beyond the requirements of the neighbourhood; at least until the effects become generally known and appreciated. It is much in favour of the success of the plan that it is no untried experiment, having been most successfully adopted and worked out at Edinburgh, Rugby, Leicester, and other places. At the first city, which contains a population of 80,000; in that half which is drained, "the sewage is applied at a cost of £5,400, and produces £4,944 net per annum, or 91 per cent., so that the inhabitannts get rid of the nuisance at the trifling cost of £456 per annum. About 8,000 tons of sewage per Scotch, or 6,400 tons per English acre, are applied annually, with the most astonishing effect. At Rugby about 432 tons per acre are applied, at three dressings, per annum. It is distributed by means of pipes and hose, under steam pressure of 80lbs. per inch, equal to 177 feet, at the rate of 140,000 gallons, or 630 tons per day. This allows at the rate of 147lbs. of nitrogen per acre on the 470 acres thus irrigated.

At Leicester the contractor has engaged to supply the whole of the machinery and apparatus gratis, on condition of having the proceeds of the sewage for twenty years, he paying all the expenses (as I understand) of the distribution; and at the end of the period contracted for, the machinery is, by the agreement, to belong to the city. The population is 65,000, and the amount of sewage 8 million tons, which, at the rate of distribution at Rugby, will supply about 18,600 acres. A charge of 40s. per acre would, therefore, produce, in round numbers, £37,000; and if the distribution could be as economically effected as at Edinburgh, the contractor would make an excellent speculation, whilst the town would receive gratis all the benefit of the improvement in the sanitary condition of the population, and the neighbouring farmers that of a cheap and valuable manure.

It is a disgraceful thing to our wealthy metropolis to allow these provincial cities and towns thus to take the initiative in one of the most important arrangements of a municipality, and bearing so directly on the sanitary condition of the inhabitants. It argues but little of that common sense, which is the first qualification in public men, to see the authorities more intent upon embellishing their city, than on providing for the health of its inhabitants. Had not the matter been taken up by other parties, we question whether the city magnates would ever have stirred in it to remedy the foul nuisance which meets you at every step within the precincts of their "kingdom," whether you travel by land or by water—through the streets, or by that *no-longer "Silver Thames,"* of which our best poets delighted to sing, and which is now, by the neglect of the corporation, converted into a huge, open, and poisonous sewer. I must leave the remainder of the calculations for a third letter. Yours, &c.,

London, Sept. 22. AN OLD NORFOLK FARMER.

NORTH WALSHAM AGRICULTURAL SOCIETY.

This society, which has now entered upon the third year of its existence, celebrated its Anniversary on Wednesday, Oct 28, at North Walsham. Although the weather was not very favourable, a considerable number of the gentry and farmers of the district were attracted to the exhibition of stock, which was held in the field near the town usually placed at the disposal of the association. The exhibition was considered to be an improvement on that of last year, especially in the cattle classes, there being an increase of forty entries.

There were altogether sixty-four exhibitors of horses, a large number for a Norfolk local meeting; and there were on the ground three cart stallions, three cart mares, eleven cart geldings, thirteen fillies, eleven colts and foals, eight hunters, fourteen hackneys, and seven riding colts and fillies. The class of horses was altogether exceedingly well represented for a local show; indeed, the riding horses were considered superior to those exhibited sometimes at the county meetings. It was also observed with pleasure that there were an increased number of entries of Norfolk hackneys, a useful class of horses which appears to be again coming into favour. The exhibition of cattle was, as has been before indicated, exceedingly good, some of the stock not being inferior to the animals shown at the general county gatherings at Norwich and Swaffham. There were seven fine short-horn bulls, one Devon, seven horned cows, the same number of polled cows, six horned heifers, some polled heifers, three yearling heifers, and eight fine fat steers. The fat stock made altogether a very creditable show. The number of sheep penned was not large, there being but three pens of five shearlings, and a few hoggets; their condition and appearance were, however, satisfactory. In the class of pigs there were four fine boars, six breeding sows, and four litters. The exhibition also included roots and grain, but the show of the former was not so large as at the Wayland Meeting, a circumstance which appears rather astonishing at first sight, as the fertile hundreds of Teenstead and Happing (the society's district) are rather celebrated for root crops. An explanation is, however, to be found in the circumstance that Mr. Cubitt, one of the largest growers in the neighbourhood, did not appear as an exhibitor, as he had been selected one of the judges. The roots which were shown were of fair size, weight, and quality; but it is considered in the neighbourhood that the temperature has been rather too high for this description of agricultural produce, which is said to have been better in the north of England, where the climate is somewhat colder. Notwithstanding this supposition, which we give as it came under our notice, some of the mangolds shown were of excellent size, the roots in some cases weighing 36lbs. each. The grain samples in the hundreds are considered to have been slightly deteriorated by the rains which prevailed before the harvest was secured. There were, however, several exhibitors of fair samples, in bulk, of red and white wheat, barley, and oats. Of trefoil, clover, and hay, there were also some good specimens in the field. We append the prize list:—

HORSES.

For the best cart stallion, not under four years old, £3, Mr. Christophor.

For the best cart mare, £3, Mr. H. J. Ireland.

For the second-best ditto, £2, Mr. J. T. Mott.

For the best three years old cart filly, £2, Mr. Charles Martins.

For the best cart gelding, three years old or upwards, Mr. Mott's premium of £2, Mr. Robt. Wortley.

For the best two years old cart filly, £1 10s., Mr. Beare.

For the second-best ditto, £1, Mr. Chas. Martins.

For the best two years old cart colt, Mr. Blake's premium of £1, Mr. B. Betts.

For the best yearling filly, £1. Not awarded.

For the best cart foal, £1 10s., Mr. Wm. Cubitt.

For the second-best ditto, £1, Mr. Beare.

For the best horse or mare, under five years old, for hunting or harness purposes, Lord Suffield's premium of £3, Mr. Holley.

For the second-best ditto, Lord Suffield's premium of £2, Mr. Salmon.

For the best hackney stallion, £2, Mr. T. Allen.

For the best hackney, £2, Mr. T. Dolphin.

For the second-best ditto, £1, Mr. W. L. Jex Blake.

For the best riding colt or filly, under four years old, £1 10s., Mr. J. G. Betts.

CATTLE.

For the best bull of any breed, £2 10s., Mr. Robert Rising.

For the second-best ditto, Mr. Dolphin's premium of £1, Mr. Chas. Martins.

For the best horned cow, £2, Mr. T. Dolphin.

For the second-best ditto, £1, Mr. T. Dolphin.

For the best polled cow, £2, Mr. Ash Rudd.

For the best horned heifer, in calf or in profit, above two and under three years old, £1 10s., Mr. J. T. Mott.

For the best polled heifer, in calf or in profit, £1 10s., Mr. J. G. Betts.

For the best yearling heifer of any breed, £1. Not awarded.

For the best fat steer of any breed, bred by the exhibitor, £3, Mr. Robert Wortley.

For the second-best ditto, £2, Mr. Beare.

For the best fat steer, grazed by the exhibitor, £2 10s., Mr. Beare.

For the second-best ditto, £1 10s., Mr. Ash Rudd, jun.

For the best fat steer, under three years old, £1 10s., Mr. Robert Wortley.

For the best fat heifer, under three years old, £1 10s., Mr. Beare.

SHEEP.

For the best pen of five shearlings, £2, Mr. Porritt.

For the second-best ditto, £1 10s., Mr. Porritt.

For the best pen of ten hoggets £2, Mr. Porritt.

For the second-best ditto £1 10s., Mr. Robert Wortley.

SWINE.

For the best boar £1 10s., Mr. Robert Wortley.

For the second-best ditto £1, Mr. T. Dolphin.

For the best breeding sow £2, Mr. Robert Wortley.

For the second-best ditto £1, Mr. Porritt.

For the best litter of pigs on the sow, not less than six, £1 10s., Mr. Fairman, jun.

For the second-best ditto £1, Mr. Robert Wortley.

For the best pen of six pigs, under six months old, being of the same litter, £1 10s., Mr. M. Neave,

For the second-best ditto, Mr. W. Burroughes' premium of £1, Mr. Robert Wortley.

ROOTS.

For the best two acres of mangel wurzel £1 5s., Mr. J. B. Porritt, Gimingham: 43 tons to the acre.

For the second-best ditto £1, Mr. F. Hylton, Felmingham; 41 tons per acre.

For the best five acres of Swedish turnips £1 5s., Mr. H. Smith, Bradfield; 12½ tons per acre.

For the second-best ditto £1, Mr. F. Hylton, Felmingham; 20½ tons per acre.

For the best acre of white turnips £1, Mr. H. Wright, Antingham; 31 tons per acre.

GRAIN.

For the best three coombs of white wheat £1, Mr. Robert Wortley.

For the best three coombs of red ditto £1, Mr. H. Wright.

For the best three coombs of barley £1, Mr. R. Wortley.

For the second-best ditto 10s., Mr. R. Wortley.

For the best three coombs of oats £1, Mr. W. Primrose.

For the best 5 cwt. of trefoil hay £1, Mr. H. Wright.

For the best 5 cwt. of clover hay £1, Mr. C. Martins.

EXTRA STOCK.

Dark chesnut hunter, 8 years old, by Birdcatcher, exhibited by Lord Suffield; chesnut mare, aged, by Sir Hercules, exhibited by Mr. Gurney Hoare; bay mare, exhibited by Mr. Gurney Hoare; bay gelding, exhibited by Mr. Gurney Hoare —*Highly commended.*

The speeches at the dinner, which took place at the King's Arms Hotel, assumed rather a more practical character than usual. The Chair was occupied by Sir H. T. Stracy, one of the late members for East Norfolk, who acted as the *locum tenens* of Lord Suffield, the President of the Association, " unable to attend in consequence of a prior engagement." The head table was well supported by representatives of the principal families in the district, including Sir E. N. Buxton, M.P., the Hon. Harbord Harbord, the Hon. W. R. Rous, Capt. Windham, R.N. (brother of Major-General Windham), &c. &c. The rank and file of the company included nearly 100 of the principal farmers of the neighbourhood.

The heroism of our troops in India,—the respect due to Major-General Windham (who may be regarded as the " speciality" of the neighbourhood, in which he drew his first breath),—the county members, — the Chairman,—and other topics, having been referred to at full length in the " usual loyal and complimentary toasts,"

The CHAIRMAN proposed the health of the President of the Association, Lord Suffield; and adverting in the course of his observations to the superior turnips produced by Mr. Cubitt, and the observations made on a former occasion by that gentleman respecting them, said: I remember at the last meeting Mr. Cubitt told us that he dissolved his own bones, bought sulphuric acid, mixed them in proper proportions, and produced the results which we all remember. Some agriculturists like myself profited by the instructions he gave. When I returned to Rackheath I called my bailiff, and told him the exact proportions which Mr. Cubitt stated. Our bones and sulphuric acid were bought; I have at this time twelve acres of turnips, treated according to Mr. Cubitt's recommendations, and I believe the land never produced a better or larger crop.

The toast having been drunk with three times three, and acknowledged by Mr. WINDHAM BARING,

Mr. MOTT proposed the "judges of stock," expressing a doubt whether animals artificially fatted could be fairly put in competition with those fed on grass, hay, or turnips. The attention of the judges should, he thought, be drawn to size, symmetry, and aptitude to fatten, more than to the artificial state of the animals exhibited.

Mr. GOULDER, in responding, said the judges had gone through the show with much satisfaction, and they had had some difficulty in awarding the premiums, especially in the class of horses, in which Lord Suffield offered a premium for a horse combining the two qualities of being good for hunting and for harness work. It was a very rare thing for a horse to combine both these qualities, and he would ask the committee to request his Lordship to divide the prize for a hunter and a harness horse.

Mr. GURNEY HOARE introduced to the meeting the " Successful exhibitors, coupling with the toast the name of Mr. Beare" (applause).

Mr. BEARE, in responding, expressed his opinion that some of the animals exhibited were of good quality, and deserved the prizes awarded to them. He regretted that the association had not more subscribers among the tenant farmers, for it was well supported by the nobility and gentry of the district. People might think that they had good breeds of horses, and beautiful animals which no one else could surpass; but let them come to the meetings of the society, place their stock side by side with others, and its quality would then be tested. West Norfolk and the Holkham estate seemed to be the pride and boast of the county, and how long was this to continue? The farmers of East Norfolk had as good land, and he hoped as much spirit; and he looked forward to the time when the eastern division would take the lead. He could not forget the interesting lecture of Mr. Cubitt, at the last meeting; first on education, secondly on agricultural chemistry, and next on the growth of turnips. He trusted that Mr. Cubitt would not cast reflections on illiterate men, as 50 years since poor people had not the same chance of education as they enjoyed at the present day; and he had known some men who thought so much of their education and accomplishments, that they had forgotten half their business (laughter and applause), and allowed some of the unlearned people to step in and beat them. With regard to the growth of turnips, and the manufacture of manure, Mr. Cubitt said, last year, the farmers were humbugged with artificial manures; but if they were, they had only themselves to thank for it. They were much benefited in the North Walsham district by Lawes' manure, a genuine article, and also by Mr. Smith's, of Bradfield. He (Mr. Beare) had tried those manures, and he would back them against any other taking the same course. Mr. Cubitt said last year that farmers not only paid men to hoe their turnips, but also to spoil their crops; if, therefore, they paid proper attention to the hoeing of turnips they might hope to get a fortune as well as Mr. Cubitt (laughter). A good deal had been said about artificial manures, but he believed that taking them generally, they had been beneficial to the crops. While the farmers were finding fault with artificial manures, he would ask them whether they paid attention to making their own manures? He had seen straw stacks rotting, which might be made into valuable manure; and he had seen the straw returned to the soil in nearly the same state as when it was taken from it. He made little use of artificial manure for the growth of swedes beyond that which came from the bellies of his beasts; all his straw was well mixed, and by this means he grew heavy and good crops. He also carried very few white turnips into his yard, as he considered there was a great waste of the crop, and his was a farm which required the hoofs of his beasts. By pressing the ground close to the root of the clover he thought he got clovers to stand the winter better, and the land came up stiff for wheat. (Mr. Beare resumed his seat amid loud cheers).

Mr. CUBITT, whose health was afterwards given in connexion with the toast of "Success to Agriculture," said his object in making the remarks last year, to which reference had just been made, was to give a practical turn to the anniversary of the Association. The real object of the Society was to enable the members to meet in friendly competition and discuss practical matters, not to exercise themselves in useless recrimination. He had had the honour of being a judge of the roots on the present occasion, and he must say with regard to the turnips that he believed they were inferior in quality, and 10 tons per acre less in weight than last year. The mangold wurzel, on the contrary, was the best crop he had ever seen; and he would put it to them whether it would not answer the purpose of the farmers better to cultivate that crop, now that the demand for beef was gaining on the supply, and as the root was one which might be consumed at all times of the year. With regard to the cart-horses shown, he might say that six weeks since he had travelled in the North of England with the view of finding a better horse than they had in Norfolk; but he could find nothing better than the Norfolk horse. Its great deficiency was its sluggishness, and he believed the briskness observed in the Northumberland horses was caused by the difference of feeding. In Northumberland a greater quantity of solid food was given to the horse, and the stomach of the animal was not distended with cut hay, pollard, and all sorts of rubbish. If the same system were pursued in Norfolk, a greater quantity of work would be obtained from their horses.

The conviviality of the evening was kept up for some time longer, several other complimentary toasts being proposed and responded to, not forgetting the Hon. H. Harland, the master of the local harriers. The event of the evening was undoubtedly the little ironical passage at arms between Mr. Beare and Mr. Cubitt. The former gentleman seems to have been cogitating his sarcasms at Mr. Cubitt's expense for the last twelve months; his declaration at the last meeting that "as he was a very unlearned man he had better keep in his seat," having excited some attention at the moment. Agricultural associations, like Christmas, come but once a-year; so agricultural Disraelis and Gladstones have to bide their time.

BATH AND WEST OF ENGLAND SOCIETY

FOR THE ENCOURAGEMENT OF AGRICULTURE, ARTS, MANUFACTURES, AND COMMERCE.

A monthly meeting of the Council of this Society was held on Saturday, Oct. 31, at Waghorn's Hotel, Taunton, John Sillifant, Esq., of Coombe, Crediton, in the chair. There were also present Messrs. T. D. Acland, W. W. Addington, D. Adair, C. C. Williams, T. B. Morle, S. J. Oldrieve, T. Danger, R. May, W. Thompson, J. E. Knollys, R. N. Grenville, J. Balfield, B. Gray, John Gray, J. H. Cotterell, S. Pitman, G. Bullock, M. Farrant, T. Hussey, J. Widdicombe, H. G. Moysey, C. Gordon, W. Wippell, J. T. Davy, &c., &c.

The Veterinary Inspector.—The committee appointed at a recent meeting to consider and report to the council generally on the office and duties of the veterinary inspector, it was stated, had not been able to complete their inquiries, and the question therefore stood over for the present.

The Annual Meeting of 1858.—The committee appointed to select the trial-fields and make other arrangements for the Cardiff Meeting were not prepared to report to the council, but expressed their intention of proceeding to Cardiff in the ensuing week, for the purpose of making the necessary arrangements. The chairman of the committee (Mr. Sillifant) reported that he had communicated with Mr. Richards, the agent of the Marchioness of Bute, with respect to the field selected by the committee (south side of Cathayes Park) for the purposes of the show-yard, and that her ladyship in the most handsome manner had entirely concurred in the views of the council, and granted that portion of the estate which they had deemed best adapted for the show.

The Prize Sheets.—The report of the committee appointed to prepare the Stock and Implement Prize-sheet for the ensuing meeting was brought up and discussed at great length. The stock prizes were, with some additions, agreed to; these for implements being referred back to the committee. The sum of ten guineas was presented to the Council by Mr. T. G. Clarke, of Dowlais House, South Wales, to be offered as a premium "for the best Essay on the maintenance of Horses used in Iron Works," under such regulations as the Council may hereafter decide. Two active members of the Council—Mr. Thomas Dyke Acland, and Mr. Jonathan Gray—also placed at the disposal of the Prize Committee the sum of £5 each, to be awarded as prizes for the best specimen of a peculiar wove fabric manufactured in the Principality. Mr. Knollys proposed that the council do take into consideration the advisability or otherwise of continuing the present system of awarding implement prizes, and the motion produced considerable discussion. It was the general opinion that a question of so much importance should not be hastily decided on, and as there was not time to give the requisite public notice previous to the next annual meeting, the subject was postponed, with a view to its being maturely considered prior to the exhibition of 1859. It was resolved, on the motion of Mr. Gray, that a programme and other details of the Cardiff Meeting, and the shipping and railway arrangements for the transit of stock and implements, be referred to the prize sheet committee, and that the same be forthwith issued together with the prize sheets.

New Members.—The following new members were elected: Right. Hon. H. Labouchere, M.P., Colonial Secretary, Stowey, Bridgwater; Capt. Hugh Jenner, Wenvoe Castle, Glamorgan; Mr. Robert Lane, jun. Shobrooke, Devon; Mr. Edward Handy, Sierford, near Cheltenham; Mr. William Nell, Cardiff; Mr. Clement Bush, Weston, near Bath; Mr Thos. Hitchcock, Brendon Hill Farm, Wiveliscombe; Mr. William Frost, Coombe Farm, Bradwinch, Collumpton; Mr. Scott Preston, Leigh, Chumleigh, Devon; Mr. W. R. Bishop, Exeter; Mr. J. R. Hussey, Waybrook, Exeter.

LANDLORDS AND THEIR DUTIES.

"Shall a hunting, bumpkin squire so presume?" asked a critic of other days, when a country gentleman dared to write a book about something or other. And, no doubt, the world went very much with him in his indignant astonishment. The country squire—at least of those other days—had few recognized duties beyond hunting, shooting, and drinking. The parson or his wife wrote his letters, and the steward managed his property. If there was an unprofitable creature in it, 'twas sure to be the great man of the place. "What," asked the old play, with subdued satire, "is a gentleman without his recreations?" And everybody of course was ready to answer—A cipher, a nonentity, a fish-out-of-water. So long as he was only true to this standard of excellence—so long as he rode and drank like a man, and spent his money like a prince, nobody complained. He was born to enjoy himself, and brought up to hold in becoming contempt anything approaching to matters of business.

But we have gradually improved upon this primeval condition. The country gentleman of this era has plenty of duties, and lots of business, if he will only attend to it. There is no shame, nor disgrace either, in doing so. People, indeed, like him all the better for it. Now, the first of these duties naturally begin about his own home. If he has ability or inclination enough to be useful anywhere, it is very odd if he cannot be of some service here. He may do something better by this than meet his tenantry for a mere drinking bout, or scatter his indiscriminate bounty amongst the poor of the parish. In fact, he is looked upon to do more. There is something of an example to set, and something of an aid to give beyond that comprehended in pounds, shillings, and pence. And so the country-gentleman figures prominently at country meetings of all kinds, but especially at those encouraging the useful arts of a rural life. He identifies himself above all else with the progress of agriculture; inciting, by no passive approval, but by his own personal exertions and experiments, others to join with him in forwarding the good work.

We have latterly had to compliment the landowners of the kingdom for their conduct in this way. There is scarcely an Agricultural Society, from that of the great national one down to the smallest local gathering, but where their presence and support have been of the most marked advantage, both to their tenantry and to themselves. They have so learnt more and more to feel what facilities good farming really requires, and have come the more readily to provide what, with less personal experience of the pursuit, they might have long hesitated to allow. In short, we might venture to take it as a sound principle, or even self-evident truism, that the more a landlord knows of the cultivation of his property, and the better he is acquainted with his tenantry, the better will it be, not only for him and his, but for the agriculture of the district generally.

Curiously enough, however, it is not so. Landlords have no business at agricultural meetings. They are far better away. They can send their agents and their subscriptions if they please; but as for themselves, farming and farmers will do a vast deal better without their interference than with it. We arrive at this opinion, and have a rather striking commentary upon it, within the proceedings of the past week. In bearing testimony, a short time since, to the manner in which the country gentlemen had been fulfilling their duties at these meetings, we had to instance one particular exception. It was that of the Durham Society, which we had the authority of *The Durham Advertiser* for declaring the landlords did not support, at least with their presence. Their absence had gradually become more and more marked, until at length there appeared to be only one left to fill the chair, or make a speech to the other order of subscribers. This was Mr. J. H. Spearman, a gentleman we have had more than once to congratulate on the ability and energy he has displayed on these occasions. We will not stay to discuss whether he was even wanted here or not, but we will go on to show what the farmers themselves thought of it. On Tuesday, Nov. 10, then, there was another agricultural dinner at Durham. This was not in the due course of the Society's celebrations, but as an especial compliment to Mr. Spearman, who was the invited guest of the occasion. He received this honour in acknowledgment of—as the resolution calling the meeting declared—"the deep interest he has ever evinced in promoting the prosperity of the agriculture of the county of Durham, and for his long and valuable services in connexion with the Durham County Agricultural Society."

So said some three hundred farmers and others who supported this resolution with their presence. But it seems they knew very little of what they were about. As merely a land-owner Mr. Spearman has little to do with the prosperity of the agriculture of the county, and if possible even less still with the County Agricultural Society. Mr. Spearman evidently felt this, when in returning thanks he thus expressed himself:—"I contend it is the duty of all owners of the soil to contribute as best they may at all times towards the prosperity of the agriculture of the county or district in which their lot may have fallen, and most of all to contribute towards the success and prosperity of the actual occupiers of the land and cultivators of that soil which belongs to us (loud applause). This being my opinion, I must say that I was surprised to see it mentioned the other day, in a very able London journal, of which I have been a constant and greatly benefited reader, that the landowners had no more to do with the interests of their tenantry than had the shipowner to do with the navigation of his ships or those who sailed them—that all these parties, alike in the one case as in the other, were ignorant and regardless of the condition of the other. It has been said, gentlemen, that it is advantageous to argue from what are called analogies—fancied analogies. I have no objection to adopt the analogy, but I utterly deny the truth of the premises, and I equally deny the conclusion (Applause). The shipowners of this great commercial country are, no doubt, deeply interested in the welfare, prosperity, and comfort of those who command and sail their vessels; and though they generally do live on *terra firma*—and, speaking as a landsman myself, I am not disposed to quarrel with them for preferring the land to the water—a great number of them are scientific navigators. It is said by the authority to whom I have referred, it is absurd to expect the owners of the land—whom he was pleased to call the Dii Majores—to attend agricultural meetings. He further said that when they did attend such meetings it was only for the purpose of talking about politics, but that generally they had other and better things, to attend to than such meetings. Now what other and better things there are to attend to than agriculture I confess I do not know. Again I say I utterly deny the premises of the writer; and I say boldly for the landowners of this country—from the highest to the lowest, from the first to the last—that there is not any nation in the world, or any body of men, who are, in all their thoughts, occupations, and pursuits, more thoroughly rural than are the landlords of this country (applause). There are many good practical farmers among them: I do not mean to say there may not be many exceptions—and standing here on this occasion, it is not for me to gainsay that there may be many local exceptions—but I am talking of a general rule, and not of any local or general exceptions. (Hear, hear.) Had the gentleman who gave expression to the opinions which I have been quoting never heard of the names of the late Duke of Bedford, of the Duke of Richmond, of Lords Spencer and Portman and others, of whom an almost interminable list might be made? (cheers). It has been well said that business is the amusement of some men's lives, whilst amusement is the business of others—and the latter was sometimes very unprofitable business too. I would, however, advise those who were in want of amusement to betake themselves to agricultural pursuits: I am quite sure there they will find the best of all amusement—aye, and they will be doing their duty, and promoting their interests at the same time (applause)."

That is a fine manly speech, one that we recommend every landlord in the kingdom to get off by heart and to act up to. To be sure, Mr. Spearman is answering an argument that has no argument in it. "There are no men who in their thoughts, occupations, and pursuits are more thoroughly rural than are the landlords of this country." It is only fair to say that it is not an agricultural journal which would thus keep them from meeting their tenantry; while as for the notion of country gentlemen knowing no more of farming than shipowners do of navigation—that is an old Anti-Corn-Law League absurdity, which we should have hoped had been forgotten or disowned long ere this. At best it is but the libel of a man who knows nothing of what he is talking, or who speaks only in prejudice. As such was it used originally, but it can be of no use now. When a man tells you the business of a landowner is *something quite distinct from farming*, it is only politeness which prevents your laughing in his face.

We say again, let the landlords of England bear in mind this speech of Mr. Spearman. We are happy to say the majority of them are already in unison with him. An owner of the soil can do nothing better than support the Agricultural Societies of his district, by his purse, and especially, by his presence and active participation in what is going on. Nothing has tended so much to advance the cause as the influence of these institutions. We have ourselves been eye-witnesses of their effect for many years now in every part of the three kingdoms; and we attribute their success more particularly to landlord and tenant uniting to support them. As we have often said before, we by no means wish the one class "to have all the talk to themselves." Let owner and occupier each have his say, and the more frequently they have the opportunity to do so the better. To maintain, on the other hand, that a landowner has no business at an agricultural gathering, but that he should learn his duties from, or leave them entirely to his agent, is so utterly incredible, that, had we not Mr. Spearman's answer, one would almost question the utterance of such an anomaly.

VALUE OF LECTURES ON AGRICULTURAL CHEMISTRY.—THE WENLOCK FARMERS' CLUB.—

At the meeting, Nov. 2nd, John Pritchard, Esq., M.P., said: "During the year that has passed we have not had quite so many meetings as usual, but those which have taken place have been of very great interest (Hear, hear). In the beginning of the year we had a most able lecture on agricultural chemistry from Mr. Nesbit, professor of that science in the college at Kennington; and most of the gentlemen I now see before me attended that meeting. Amongst other subjects to which Mr. Nesbit referred, and of which I think we cannot too often be reminded, was the care of manure in farmyards, by taking care that too great a quantity of water does not get to it, by insufficient spouting of the farm buildings. You may recollect that he advised the covering now and then of the manure with soil, so as to prevent it from losing some of its more valuable properties. He also spoke of clover, and said it would be well if, instead of clearing off clover in autumn, we left it to grow to the following summer, as the roots increased in the same proportion as the leaves; and that as the roots afforded greater nourishment, and brought forward a better crop of wheat, it would be better to let them remain increasing during the greater part of the year. You will remember that he also said we use lime too frequently, and that it would be better if we only used it once in the course of five or six years. His observations with regard to artificial manure were also highly important and useful; and I think we can see that some farmers have profited by his advice when we look at the superior crops of turnips which have been produced by the use of the artificial manure of which he spoke."

AGRICULTURAL VALUE OF THE METROPOLITAN DRAINAGE.

It will be remembered that the First Commissioner of her Majesty's works referred to Captain Douglas Galton, R.E., and Messrs. James Simpson, and Thomas E. Blackwell, certain questions relating to the main drainage of the metropolis. Those gentlemen, in the course of their inquiry, deemed it necessary to secure the assistance of Dr. Hofmann, chemist to the Museum of Practical Geology, and Mr. Henry Witt, assistant chemist there, in making the chemical investigations lately connected with the subject. These gentlemen have made their report, which has been presented to Parliament, and is now printed as one of the sessional papers. The experiments were continued over a space of four months, during which the influence of the sewage on the Thames water, the composition and value of the sewage, the principal methods proposed for utilization and deodorization of it, and the treatment of sewage in its sanitary aspects, were carefully investigated. The details are given at considerable length, with all the analytical numbers upon which the results are based, so that any one interested may examine and interpret for himself the foundations of the statements made. The following are the conclusions arrived at, under the five heads, as suggested in the original letter of reference. The authors sum up the principal results as follow :—

I.—INFLUENCE OF THE SEWAGE ON THE COMPOSITION OF THE WATER OF THE THAMES.

(*a.*) Owing to the very great dilution of the sewage by the water of the Thames, chemical analysis indicates but a slight difference in the composition of the river water before and after pollution.

(*b.*) Contrary to what might have been expected, the influence of the sewage scarcely increases the *quantity of dissolved organic matter.*

(*c.*) The presence of sewage perceptibly raises the proportion of mineral constituents, and especially of common salt.

(*d.*) The amount of *insoluble organic matter* which is present in the *mud suspended* in the river *steadily increases* with the degree of contamination.

(*e.*) The offensive character of the river water, the disengagement from it (especially during hot weather) of effluvia, not only highly offensive, but also exceedingly prejudicial to the health of the inhabitants of the districts lying along the banks, is *chiefly caused by the putrefaction of the organic matter dissolved and insoluble,* which is diffused through the water.

(*f.*) The *intensity of this putrefactive decomposition,* which the organic matter present in the water undergoes within the metropolitan area, arises from the constant supply of putrescible matter, partly by *the influx of the sewage,* but more especially by the *vast accumulation of the black sewage mud* which has gradually collected in the bed of the river.

II.—MEAN COMPOSITION AND AGRICULTURAL VALUE OF THE SEWAGE.

(*a.*) According to experiments made on specimens which represent its mean composition, the London sewage contains on an average, 102·8 grains per imperial gallon of total solid constituents, of which 72·1 grains are mineral, and 30·7 grains organic matter.

(*b.*) In these 102·8 grains the following quantities of substances valuable in an agricultural point of view are present :—

Nitrogen	6·7
Phosphoric acid	1·8
Potash	1·0
Organic matter	30·7
Total	40·2

(*c.*) The *total solid matter,* when entirely separated from the water with which it is diluted, would have a money-value of £6 0s. 3d. per ton ; that of guano being taken at £11.

(*d.*) Of the valuable matter, six-sevenths are present in the liquid portion, only *one-seventh* existing in the insoluble or suspended form.

(*e.*) From the knowledge of the quantity of these valuable constituents contained in a given volume of sewage, it has been calculated that the *money-value* of 100 *tons of sewage,* supposing all these bodies capable of separation, would be in its original condition 17s. 7d., or 2d. per ton ; and that, therefore, the whole sewage of London is worth £3,796 per diem, or £1,385,540 per annum.

(*f.*) Those numbers are, to a certain extent, confirmed by the calculation of the value of the solid and liquid excrements of the whole population of London.

(*g.*) The foundation of this calculation is, moreover, confirmed by the analyses of a variety of specimens of sewage, made on different occasions both by ourselves and by others.

(*h.*) The chemical composition of the sewage of Edinburgh, and also that of Leicester, differs but little from that of the London sewage.

III.—UTILIZATION OF SEWAGE FOR AGRICULTURAL PURPOSES.

Manufacture of a Manure from Sewage.

The following, among the many patented processes for the manufacture of manures from sewage, are those which, in accordance with the wishes of the referees, were especially selected for the examination—viz. :

(A.) Treatment of sewage with lime.

(B.) Treatment of sewage with a mixture of lime, sulphate of ammonia, and charcoal (Stothert and Gotto's process).

(C.) Treatment of sewage with charcoal (Jasper Rogers and Richard Dover's processes) :

1. Filtration of sewage through charcoal.
2. Agitation of sewage with charcoal.

We were also directed to report our opinion upon—

(D.) Treatment of sewage with a magnesian salt (Sir James Murray's process).

The following are the conclusions at which we have arrived under this head :

(a.) With respect to process (B.), Messrs. Stothert and Gotto's, we find that the cost of the materials employed, irrespectively of working expenses, nearly equals the money value of the manure produced; whilst in process C., 1. Filtration through charcoal, the cost of the materials very considerably exceeds the money value of the manure obtained. These processes cannot, therefore, be

entertained, if the object be to manufacture a manure as a commercial speculation.

(b.) The magnesia process was not experimentally examined: nevertheless, our researches into the nature of sewage, together with the knowledge of the well-established chemical properties of the ammonio-magnesian phosphate, especially of its solubility in water and other menstrua, enable us to state that, owing to the extreme dilution of the sewage, the addition to it of a magnesian salt would produce either no precipitate of the ammonio-magnesian phosphate at all, or only of a most minute quantity; so that the manure produced by this process would essentially consist of the suspended matter of the sewage, which might as easily be collected by simple subsidence, and which contains only one-seventh of the valuable constituents of sewage.

(*c.*) With reference to the two remaining processes, viz., treatment with lime (A.), and agitation with charcoal (C. 2,) we find from our experiments made on a small scale, that the value of the manure produced considerably exceeds the cost of the materials employed. However, on going minutely into all the conditions involved in the manufacture of a manure from the London sewage by the two processes above mentioned, we come to the conclusion that they offer no chance as commercial speculations.

We have been led to this conclusion by considerations, among which the following are the more important:—

(1.) In estimating the commercial prospects of a process, it is safer to rely upon the results obtained in a manufacturing operation than on those furnished by experiments on a smaller scale. Now, analysis shows that the value of the article manufactured at the works at Leicester, where the liming process is adopted, is less than one-half of the value which experiment assigns to our manure obtained on a small scale.

(2.) In calculating the probable expense of manufacturing the sewage manure, the interest of the capital required for the erection of works, the actual cost of producing, and the commercial expenditure, we have but insufficient data, and they have therefore probably been estimated below what would be found to be the case in practice; all these circumstances prove that the profit resulting from the manufacture of sewage manure would be reduced to a very small amount.

(3.) The nature of the manure manufactured by either of these processes, its great bulk containing as it does but a very small quantity of valuable constituents in a very large mass of inert matter, increases the cost of carriage and spreading, when compared with that of guano, to such an extent as to limit its extent to a very small area. With reference to the liming process, for instance, taking the value of the Leicester bricks as representing the average value of the lime manure, and starting from the calculation of the manufacturing expenses chiefly furnished by the estimate of Mr. Wicksteed, the patentee, we find that the profit on a ton of lime manure sold at the works would be 5s. 3d., whilst at a distance of only two miles from the works it could not realize more than 2s. 3d. profit, and when transported to a distance of five miles, the manure would have to be sold at a loss.

IV.—Utilization with Sewage in a Liquid State.

Irrigation with Sewage.

In order fully to appreciate the proposal which has been made of using sewage for the purpose of irrigation (an application, the beneficial and advantageous results of which are established beyond a doubt), it is necessary to recollect that 100 tons of London sewage contain 2s. 2½d. worth of valuable constituents in the solid, and 15s. 4½d. worth in the liquid form; and that in order to supply a meadow with valuable matters corresponding in quantity to those contained in one ton of guano, it is necessary to irrigate with 1,250 tons, or 310,000 gallons of sewage.

A general consideration of the question points out the great expense which necessarily must attend a regular distribution in this way of the enormous quantities of sewage produced annually by the Metropolis; nevertheless, there are too many elements (engineering and agricultural) entering into the question to enable us, as chemists, to pronounce any very decided opinion as to whether the application of the sewage of the Metropolis in this way would, or would not, be a remunerative commercial speculation; but so far as we have been enabled to ascertain, we believe that the proposal of using it in this way is the one *which appears to us to be the most promising*; and, we would even say, *the only that has any chance of success as a commercial scheme*; and we would therefore suggest that, in devising means for removing the metropolitan sewage, they should not exclude the possibility of giving this method the trial which it merits.

V.—Consideration of the Manufacture of Sewage Manure from a Sanitary Point of View.

The several processes submitted to us for *deodorizing and consolidating sewage into a manure* viz, (A.) by means of lime—(B.) By the use of Stothert and Gotto's mixture, (C. 1,) by filtration through charcoal, and (C. 2,) by shaking with charcoal—*all fulfil, to a certain extent, the office for which they were proposed.* At the same time it is found that these several processes *leave a large quantity of putrescible organic matter in solution, which, especially in hot weather, is apt to undergo decomposition, and to give rise to the generation of effluvia of the most offensive and dangerous character*; and we believe that the *erection of works in the immediate neighbourhood of the metropolis,* for the deodorization of the London sewage, *might prove very prejudicial to the health and comfort* of the inhabitants of London; and that, in the event of the establishment of such works *the fluid run off from the sewage deposit, if discharged into the Thames in the vicinity of London, might very seriously affect the river.—Journal of the Society of Arts.*

AUTUMN CULTIVATION.

Sir,—If you think the following statement worthy a place in your valuable paper, it may perhaps show the heavy-land farmers the advantage of following the plan of autumn cultivation adopted by Mr. Smith, of Woolston. In an 18-acre field of heavy land I had one part sown last autumn with tares, not having seed enough. I left three lands unsown, they were manured and ploughed the same as the part sown; the rest of the field was to be mangel wurzel. In April, 1857, I went with others over Mr. Smith's farm at Woolston. From what I saw of his cultivation I was convinced that if I sowed the above three lands without ploughing the ground again I should have a good crop of mangels. Having the adjoining part manured and ready for sowing, I put on to the three autumn-ploughed lands (which I call No. 1) and the three adjoining (No. 2) 2 cwt. of guano and 1 cwt. of salt per acre; the three next lands (No. 3) 6 cwt. of salt per acre; and the remainder (No. 4) had no artificial manure. The seed was sown dry on all the lots the same day. The weather set in dry, but No. 1 was up and in rows before I could see any plants in Nos. 2, 3, or 4. After flat hoeing I set two horses with Read's subsoiler to subsoil between the rows 11 inches deep over the whole piece. I have measured and weighed two lines across the lands; the result is as follows:—

	First line.				Second line.				Average per acre.			
	T.	C.	Q.	P.	T.	C.	Q.	P.	T.	C.	Q.	P.
No. 1....	40	16	0	0	47	4	0	0	44	0	0	0
2....	36	16	0	18	40	5	2	24	36	11	0	21
3....	31	6	2	24	37	14	1	4	34	10	1	20
4....	32	8	0	0	34	12	0	0	33	10	0	0

Between Mr. Smith's system and the ordinary plan there is a difference of 10 tons 10 cwt., which at 21s. per ton, the present price delivered, is £11 0s. 6d. per acre; deduct the value of guano and salt £1 11s., there remains £9 9s. 6d. per acre in favour of the autumn cultivation,

I remain, sir, your obedient servant,

Friar's-place, Acton, Nov. 5. FRANCIS HAMILTON

DEEP AND SHALLOW DRAINING.

At the Ticehurst Agricultural Society's dinner, towards the close of the speeches the following practical observations were made on draining the lands of Sussex and Surrey.

W. C. **MORELAND**, Esq., said—He was sure the company had listened with great interest to the remarks made by the various speakers, and they had reminded him of a suggestion that had been made by two members of the association, which was worthy of their consideration, namely, whether it would not be well on those occasions that a committee should select some topic connected with agriculture, which might be considered as the topic for discussion during the evening. It seemed to him that, although they had a stubborn soil to deal with, yet it was one which he thought might be greatly improved by good usage. They had much to do, however, before they could get out of it the good that was in it. It would be hard work to do it, especially when to the stubborn soil they added the wetness of the English climate—such days, for instance, as they had had that day. Such weather produced on the Sussex clay an effect which lasted a considerable time. One of the most important subjects for discussion in that county was, no doubt, the question relating to drainage. Lord Abergavenny, they had heard from Mr. Delves, was going to alter the conditions of his prize in regard to the depth of drainage; some of the company would think it a right step and some of them a wrong one; but for his own part he thought it was a right one. Very likely he might be wrong and they right: they had had more experience than he had; but at the same time he had drained a large number of acres at a depth of four feet, and he knew if he went to his outfalls a day like that he should find them falling torrents of water, and they would continue to pour out water for a considerable time. He was aware that two or three of his tenants had held as strong an opinion as any person present that thirty inches was a good depth, but they now preferred four feet. That, he thought, was an argument in favour of going to a greater depth; still he would not put his limited experience against theirs. He invited any of them to go and look at his outfalls and see if they did not work to satisfaction. Without deep drainage it did not appear to him that they could cultivate their land in a proper way; the roots would go down and choke the shallow drains. He could not say he had seen anything of the sort himself, but he knew a close near Reigate where there was a stiff, strong clay taken up, owing to its being choked up by mangel wurzel root. That was something like dry ground. He thought all these were arguments in favour of deeper drainage, which he wished them at any rate to consider and see whether there might not be some little reason in it; he thought it could not be wholly without reason. The Government had fixed upon that depth, and they had large experience; but he did not mean to say that Government was infallible in those matters, yet they had great means of judging, for a great deal of drainage was carried on under their sanction. Upon all those grounds he was inclined to thank Lord Abergavenny for the move he had taken, and hoped they would be induced to follow in that question.

The **CHAIRMAN** (H. Dixon, Esq.) said—They had begun a slight discussion about the drainage, which he should be unwilling to continue except to state what occurred to him when he drained, and he thought it would be no presumption to tell his failing, although it might have been if he had spoken as to what he thought was best. What he had done was shallow drainage at 2 ft. 6 in. The water could not get through the stiff clay. His bailiff did not take into consideration that there was a good deal more water below than above, which had been ascending for a long time. They thought but little of the water that came up, and how quickly it came up; a little deeper drain would remedy the water at the bottom, which he believed was very injurious to the land. It was not the water they wanted to carry off so quickly as to nourish the crops and make them grow. He hoped that many gentlemen present, if they saw any pamphlet upon the subject, written by a practical man, would look into it and see how water did rise, especially after rain. Then he thought, with all due deference to those who liked shallow drainage, that they would feel inclined to a deeper system; at least he trusted they would.

Mr. **DELVES** said he was very pleased to hear the proposition that in future at the annual meeting they should select some topic of interest to discuss; he was sure that such a course would redound to the advantage of the association and the district generally. He was sure, if in a small district as that there was such a diversity of opinion upon the subject of drainage, about which he should not have thought there could have been two opinions, it showed that there was a field for discussion in which every member could join. He hoped that in the meantime the subject of drainage would occupy their study more than it had hitherto done. He had himself been for some time a drainer at 30 inches, and had drained fields during ten or twelve years at a depth of 27 inches and 28 inches. He had acted on the old principle of catching the top water as soon as he could, and paid no attention to the bottom water, and after a time he found that his drains were all stopped up, but he had subsequently drained at 36 inches with great success. A few such facts as had been stated by gentlemen present would turn the opinion of many who would at first think that the great object was to catch the top water, but his experience had taught him that they need not trouble themselves about the top water. If they kept their ground in such a state as to receive the water, it would soon go into the pipes.

Mr. Noakes said they appeared to differ widely with regard to draining; he had drained stiff land at a depth of 27 inches and 30 inches, which he had found more beneficial than when he had drained them deeper.

The Rev. J. Gould thought the suggestion which had been thrown out by Mr. Moreland with regard to the discussion of a subject at their annual meetings was a very good one. He should like to have a discussion of that sort, more at large, and not merely local, in which every gentleman might state his own experience; for instance, upon the subject of drainage, let him state upon what sort of soil the drain had been made, what depth, with what result, what he thought would have been better. He should also like to hear a discussion upon green crops, which would form a very interesting topic; he thought green crops were much neglected in this neighbourhood, which he could not account for, considering that they had so many crops which required so much manure. A larger growth would allow them to feed more beasts than they had hitherto done, and would doubtless lead to an improvement of the breed, and other beneficial results. There were several things of that sort which might be considered with much advantage at the annual meetings. He suggested the formation of a committee for the purpose of communicating with the various parishes of the union, by which means members might come prepared to state what they had done with regard to drainage and green crops, how much stock they had been able to keep in comparison with former years, what implements were most useful in different grounds, upon which facts discussions of a beneficial nature might arise.

THE IMPORT AND EXPORT OF BARLEY PRODUCTIONS.

In our previous observations on the barley trade, we have shown, by tables extracted from the published accounts of the Board of Trade (so far at least as they afford information), the production and consumption of that grain in the United Kingdom. We have, however, not yet noticed the quantity of beer and ale exported, which is, of course, included in the quantity of malt on which the duty is paid. In order, therefore, to complete the statement, we now subjoin the number of barrels of these articles exported in the sixteen years from 1841 to 1856 inclusive, taken from the same official source; and although the quantity is small comparatively, it will be seen that it is rapidly increasing, and is likely to prove an important item in the general exports of the country.

Return of the quantities of beer and ale exported from the United Kingdom for sixteen years, from 1841 to 1856 inclusive, with the declared value thereof:—

	Barrels.	Declared value.
1841	148,099	£360,420
1842	141,313	343,740
1843	146,313	383,131
1844	169,830	437,373
1845	156,743	439,066
1846	133,383	381,799
1847	134,004	403,759
1848	136,724	410,472
1849	135,672	418,325
1850	182,480	558,794
1851	190,077	577,842
1852	244,115	754,627
1853	416,412	1,291,357
1854	398,941	1,314,817
1855	384,414	1,398,885
1856	409,059	1,457,425
	3,527,623	£10,931,832
Average per year..	220,476½	£689,489 10s.

Average price per barrel......£3 2s. 6½d.

If we reckon two bushels of malt to each barrel of beer and ale, it gives an average of 440,552 bushels of malt per year for the whole term. But if we take the average of the last six years, it amounts to 340,503 barrels, representing 681,006 bushels of malt. Or for the last three years, which will bring the estimate to the present period, it will be 394,138 barrels, and 788,276 bushels of malt. This latter quantity, at the rate of ten bushels of malt to nine bushels of barley, represents 709,449 bushels, or 88,681 quarters of barley exported in the shape of malt liquors. It will be seen by a reference to the above table, that this export trade has largely increased since 1850, the excess having chiefly gone to our own colonies, especially the East Indies and Australia. We may therefore reasonably expect that every year will increase the demand, both for malt and malt liquors for those countries; consequently that barley for malting purposes will be increasingly in demand; and as the home-grown produce is what is chiefly used for that purpose, it is most probable that the relative value of that grain, as compared with that of wheat, will continue to be higher than formerly, which was about two-thirds.

At present, the value of the best malting barley is out of all proportion with that of inferior qualities; the range of that grain being from 24s. the lowest to 48s. the highest price per quarter. This is in a great measure to be ascribed to the influence of the two last seasons, by which both the quantity of produce was less than usual, and a large proportion of the crop was also injured to a very large extent, so that the proportion of malting barley of the best quality is exceedingly small. It is therefore probable that during the malting season the price of that description of barley will maintain its value, subject however to those fluctuations to which every article of commerce, however scarce, is liable.

The barley exported in the shape of malt liquors, ardent spirits, and malt, with the addition of the foreign barley re-exported in its original state, amounts to nearly one-sixth of the quantity imported, as the following statement shows :—

Average importation............		706,173 qrs.
Average exportation, as ale and beer	88,681	
Ardent spirits	577,276	
Malt	170,175	
Barley ....about	64,800	
Bushels	900,132	=112,516½ qrs.

This, however, does not include the export of British and Irish barley, of which no account is kept either by the Board of Trade or any private persons that we are aware of. A considerable quantity has been exported to France the last two or three seasons, both as seed-corn and for distilling purposes; the latter in consequence of the failure of the vintage. As the disease with which the vine has been affected appears in a great measure to have expended itself, and is disappearing in most of the vineyards, this part of the demand will probably cease another season. Be this as it may, the season of 1858 will certainly commence with an exhausted stock and an increasing demand; and we may therefore look forward to at least a fair remunerating price for this grain under any circumstances of the next year's crop. And with regard to the present season, the stock of malting barley now on hand, of superior quality, is very limited, and that description must continue to bear a good price to the end of the malting season. We shall probably get a fair quantity of Saale barley by way of Hamburg; but the most extensive importations are small when compared with a deficiency in the crop, equal to those of the two past seasons.

PLOUGHING—ITS OPERATION AND EFFECT.

Having already examined the arrangement and construction of the parts of a modern plough, we are prepared to investigate the *rationale* of its operation. Of this, the principal feature which it presents is the complete inversion of the soil upon which the plough operates. The cutting of the slice of a determinate breadth and thickness is performed by the coulter, and the sock or share; the vertical cut being effected by the coulter, and the horizontal by the share. The share only partially cuts the slice; the remainder being torn from the soil as the plough is passed under; while the slice so cut is transmitted and laid over at a certain angle through the medium of the mould-board. The slice during this transmission assumes a variety of positions, until it is finally deposited in such a way that the slice forming the upper surface of the soil is completely covered, lying against the slice previously deposited at an angle of 45 deg., while the side which formed the bottom is now fully exposed to the atmosphere; the same being the case with the side which lay against the unbroken land.

The following diagram will illustrate three of the positions of the furrow slice; the first of which represents it when just cut; *a b* being the land edge cut by the coulter, *b c* the bottom cut by the share. The second diagram illustrates the vertical position of the slice, where the side *a b* is uppermost, and the side *a d* towards the right hand. The third diagram illustrates the final position of the slice, in which the side *a d*, formerly the top, assumes the position of the lowest surface; the bottom, *b c*, now forming the top. The result of these movements is that the sides *a b* and bottom *b c* are partly exposed to the ameliorating influences of the weather; while the grass, stubble, &c., of the original upper surface *a d* are completely buried. A succession of slices thus laid over, assume the section as in the following diagram; giving a series of angular seed-furrows, as *e a b*, *b c d*. The plough gives its utmost efficiency when the exposed surfaces, *a b*, *b c*, or *b c*, *c d*, are of equal breadth; this arrangement giving a greater amount of surface exposed to the atmosphere, as well as the greatest cubical contact in the triangle, *a b c*.

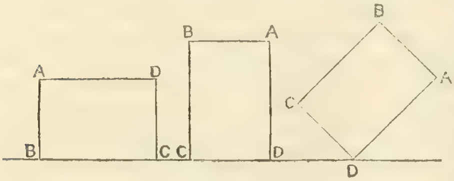

Fig. 1.

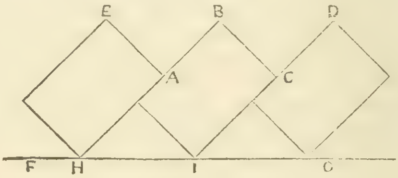

Fig. 2.

Ploughing, then, properly so called, consists in the complete inversion of a succession of slices cut from the solid land in the form of parallelograms; laying these over at a determinate angle, so as to expose the maximum surface to the ameliorating influence of the atmosphere, and to form at the same time a succession of seed-furrows. The point has often been discussed, what constitutes good ploughing; but apart from other considerations of fitness, &c., ploughing *per se* may be defined as above. Whether, however, this laying over of the furrow-slice and giving to it its peculiar form—points which are always strongly insisted on—are the principal, if not the only ones necessary to secure good cultivation is another question. Ploughing and cultivation may be two very different things: indeed a school of agriculturists fast rising into importance do not hesitate to declare that they are really so, and that good cultivation cannot be effected through the medium of the plough, inasmuch as its very action leaves an important part of the soil in a state unfitted for the reception and nourishment of the plants.

Referring to the last-given of our illustrations, and to our description of the plough in our last article, the reader will perceive that the passage of the sole of the plough tends to form a crust, or hardened surface, in the bottom of the furrow; that however well pulverized the parts of the slices above this may be, this line *f g* (in last diagram) forms the line of demarkation between the parts operated upon and those never coming under the disturbing influence of the plough; for the oftener the land is ploughed—the depth being generally uniform—the harder does this surface become. Three evils may thus be brought into action: increase of draught of the plough in succeeding workings; the formation of chambers, as *h a i* (last diagram), in which surface-water may collect, and of a hard crust, *f g*, through which the roots of plants cannot easily enter, confining their growth to the comparatively small depth of the furrow-slice, *d b* (first diagram). Now these three evils are inherent in the action of every plough; and of these three the opponents of the implement give the last as that productive of the greatest loss to the agriculturist. The operation of the plough in this way, it is argued, is practically a limitation of the seed-bed and of the consequent productiveness of the plough. You may increase the depth to which the plough may work; but with increase of depth you bring about an immense increase in difficulty of working, and the consequent increase of cost. So that each succeeding advocate of *deep-ploughing* finds at last the limit of his operations, and produces, equally with his shallow-ploughing neighbour, the hardened crust or sole, beyond which little growth of the root of the plant may be hoped for. And while some say that a depth of furrow of six inches is sufficient, others as dogmatically assert the virtues of a ten-inch one; while experience and theory would seem to show that the deeper we have our pulverized soil the better, and that it is difficult to know where to place the line beyond which we should not stir our soil. In view of this acknowledged defect of the plough, a graphic and well-known writer on agricultural subjects has the following remarks: "I say that the plough has sentence of death written upon it, because it is essentially imperfect; what it does is little towards the work of cultivation, but that little is limited by a radical imperfection—damage to the subsoil, which is pressed and hardened by the share in an exact ratio with the weight of the soil lifted, plus that of the force required to effect the damage, and the weight of the instrument itself. Were there no other reason for saying it than this, this alone would entitle the philosophic mechanist to say and see that the plough was never meant to be immortal." Indeed, should opinions respecting the utility of deepening the seed-bed spread widely, and result in demonstrating beyond gainsay that larger returns are obtainable from deep than from shallow culture, it is difficult to see how the plough, in its present form, can long maintain its high position. Certain it is that the stirring or raising up of the soil to a depth of four to six inches only, as is so generally practised, cannot long be maintained as giving good work. It is neither good ploughing nor good cultivation: it is a simple scratching or scoring of the surface; a stage little advanced beyond the mere elementary idea of ploughing, and altogether unworthy of modern cultivation; when, however diverse our opinions may be as to the benefits derivable from the very deep culture advocated by some, there is, nevertheless, demonstration enough that deeper culture than was practised universally not many years ago is really desiderated, if we wish for good cultural results. Indeed it is just in view of the importance of a deep seed bed that the discussion about the fitness of the plough has arisen; for, however fitly the work is done and essential to good cultivation its peculiar characteristics may be deemed to be, there is a limit beyond which it cannot be worked with profit; for the difficulty of working it increases in a much higher ratio than the increase of depth. Hence it is that even with those who accept the plough as the instrument best calculated to secure good cultivation, the necessity has made itself apparent that, to enable it to stir the soil to a greater depth, much must be done in the modification of its form and details; the improvements desiderated pointing to the lessening of the draught and the prevention of the hard crust or sole in the bottom of the furrows.

This lessening of the draught has been proposed to be effected in a variety of ways. Attention, however, has been chiefly paid to the form of the mould-board, so that it will transmit the slice to its final position with the least expenditure of force. Some ploughs effect this with wonderful precision and accuracy; the furrow-slice being turned over in one unbroken mass. In view however of the advantages of disintegrating the soil, it has been questioned whether this result is what is required; for we can easily conceive how that certain soils may be laid over in such slices that these will, in place of being pulverized, become hardened like sun-dried bricks, and yield under the action of succeeding implements harder clods or lumps than is at all desirable. So that a plough which turns over and in turning disintegrates the soil, although displaying a heavier draught, may, in the end, be cheaper—because giving the best work—than a plough which has a lighter draught. For we can easily conceive of a machine doing its work easily, with a small expenditure of power, being dearer than another which requires greater power; for it is not merely the fact of doing a certain amount of work that is to be considered, the quality of the work, and whether it is fitted for the end we have in view, are points that must have weight, if we wish good results. A gardener might plough his land more quickly and cheaper than he could dig it with the spade; but the saving he could thus effect would be far out-weighed by the loss he might sustain in the lower production of his soil. The question of first economy is not the all-important one which it seems to be to many; the first consideration is, or at all events ought to be, what *kind* of work do we require; and this being decided on, the cheapest instrument in the end is that which does the work best. A cotton manufacturer could much more cheaply prepare his material in a half way, but he thinks it best and wisest to do it wholly, even although this demands costlier mechanism and greater power. Half-work can in nowise be called work, which to be work must be complete, wholly finished; or else it is a mere approach to a beginning only, of the task to be performed. Whether such whole work will pay, may be and is disputed; but to our mind, if half-work is worth doing, it must be infinitely better to do whole work. What is worth doing at all, is worth doing thoroughly. We have no difficulty in remembering numerous instances in agricultural science where nothing but ruin was prophesied to those who were determined to do complete work, no matter at what cost; and the result of whose labours has, nevertheless, been great gain. Without being invidious we may refer to the successful labours of the Marquis of Tweeddale in raising to an enormous extent the value of land, through his doing complete work in the way of cultivation, at a cost which seemed to many to be little else than ruinous.

LAMENESS IN HORSES.

BY W. PIERCE V. S., RAVENNA, OHIO.

Why are so many horses lame? This question every practitioner is frequently asked. Lameness is becoming so common that we can scarcely find a horse that is not either lame, or if he is not so, it is because both feet, or limbs, are alike stiff and sore. As we pass along the side walk, it is seldom we see a horse stand with his limbs and feet in a natural position, but generally find some with one forefoot set out as far as it can be reached, others with both feet thrown forward; some with contracted hoofs, others with evident fever feet; some standing tiptoe with their knees bent forward, others sprawling, like a bear, on their pasterns; some with contracted or sunken breast, others with sunken shoulders, and many with cracked hoofs, ridged surfaces, and contracted heels. And indeed it is rare to see a perfect foot on a horse (in Northern Ohio) after he is four years old. The reason given for this, I hope, will put some on their guard, and set others thinking. In the first place the colt is taken in hand to break. The owner, although not a judge of colts, thinks he will make rather a fancy horse. He commences by taking him to the smithy. He tells the blacksmith that he wants the colt shod forward, and to do it in the most scientific style, make his foot look fancy, cut the heel down so as to have a wide-heeled shoe, cut away the frog, dress out the bottom of the foot, and "do it up brown," as the colts should be shod "scientifically" the first time; sock the nails home, clinch fast, don't be afraid of your rasp. "Now he looks as if he could travel, and if there is any trot in him it must come out."

Now, boys, we have done harvesting, and the colt is shod, and we will have a week to visit and break colts in; we must not go far the first day; five miles is far enough when they're all in a sweat, with the new shoes on, feet highly fevered, and painful. The colt must show out a little, go to town and back, five miles more, then go home, perhaps checked up all this time. Now where must all this fever terminate? In the feet, most certainly, and when turned out, the uncomfortable condition and pain in the feet will cause him soon to lie down. On feeling the feet, they will be found intensely hot, and the pastern arteries beat with great violence. The feet, now confined with an iron bar spiked on with eight strong nails, minus the most of the frog and all the insensible sole, is not only confined, but deprived of its usual moisture. But it won't do to let this colt remain idle too long; he will forget what he has learned. Use him often, but be careful of him. When he trots, put him through, don't learnt him to nudge along, but be careful. Let him know he can get up his head and handle his feet; but be careful, colts are easily hurt. But don't let every one drive past you; let them know we have as good a horse as theirs, but be careful. It is a poor Morgan that can't go his twelve miles an hour on a good dry, hard road, or planks; and one hour's drive can't hurt a colt much, if he is well shod. How it looks to see a fine carriage, plated harness and whip, moping along on a good road in the hot sun and dust! Get right along as though you were men of business, and had some life and energy about you! But be careful of the colts. If they should lose any shoes off, give particular directions to the smith to put them on very nice.

Yes, this nice, stylish, scientific shoeing, which is ordered by every one who has a horse, is doing more mischief and harm to horses' feet than it could do to let them run barefoot all their lives. It renders them less serviceable, causes more pain, and leads to more grievous evils than any other course. It is the cause of the greatest barbarities, by frequent change of masters. Who is afraid to purchase a horse that has never been shod? Some may ask, Who ever saw an old horse, that never was shod? but I have seen horses over twenty years old, that never had shoes on their feet, and yet were almost constantly in use. In the early settlement of Western Pennsylvania, it was rare to see a horse shod; and it is only of late that shoeing the hind feet has been practised. Although the country is mountainous and stony, it is not uncommon to find horses, four, five, or six years old, that were never shod. Bad feet, and lameness from shoeing, are seldom known. The shoers there would be called bunglers. They seldom take much pains, pare but little, bang on the shoe, and let it go. If it stays on only one week, so much the better: it may be two or three months before the horse will be needed again. It is my practice to tell the shoer (if he asks anything about how I will have it done) to do it in the most bungling manner he knows how: I only forbid fancy shoeing. I always dictate the shoeing of diseased feet while treating them. A fevered foot is apt to remain so as long as the horse lives: I never knew one to recover without treatment. I think nine cases out of ten of all this lameness, contracted tendons, nerves, and sweenied shoulders, have their cause *in the feet*, either from *fever*, contraction, ossification of the cartilage, indentation of the margin of the coffin-bone, or a grub which we lately discovered working between the sensible and insensible sole of the foot. Its track can easily be followed, by the dust formed in its passage around the lower part of the hoof, and as far up as the coffin-bone. This lameness can be cured by treatment to kill the grub, or the application of turpentine. In some cases, it would be difficult to find the grub without injuring the foot; and the latter remedy will be effectual, if one exists in the foot. The causes to which diseases in the feet can be traced, according to my observations, are as follows: Fancy shoeing, 60 in 100; founder, 20 in 100; congestive fever, 5 in 100; driving into cold water, sudden chilling, &c., 5 in 100; hereditary or unaccountable, careless shoeing, 5 in 100. There may still be other causes; but they are so rare, that a practitioner may not meet with more than one of each in a lifetime. Wounds, strains, and fractures of bones sometimes occur in those parts; but the skilful practitioner will readily detect these. This matter is worthy the investigation of all lovers of good horses.—*Ohio Farmer.*

SHEEP AND HOG MANURES.

Sheep manure is highly concentrated, and consequently nearly as powerful in its effects, when first applied, as the excrements of domestic poultry, which are considered the most powerful of any of the legitimate manures of the farm. The dung of sheep contains considerable ammonia, and the urine is particularly rich in this valuable but easily dissipated constituent. When sheep manure is kept in a heap it decomposes rapidly; but when spread over the land, as it is usually left where sheep are pastured, its decomposition is slow and imperfect. It is very quick in its action on the soil, and consequently should not be spread in large quantities on light lands for cereals, as it causes them to run too much to straw. Where sheep are kept even in large flocks, much too little attention is paid to the item of dung, as it is supposed to be so small an affair; but good farmers find that it is the attention to all these little things that makes the farm profitable. In the summer season, when the sheep are pastured, no care is necessary, for they manage the matter themselves; but in the winter, when they are mostly kept and fed in sheds or folds, by judicious littering a valuable supply of the best of fertilizers can be obtained from them, the only fault of which is that it is easily dissipated after its application to the soil, which can hardly be considered objectionable, as it enables us to get the substance of it sooner back again in the shape of good crops.

Hog manure comes next in our category, and although last it is certainly not least in the opinion of all practical farmers. From the many and various kinds of food consumed by swine, we would naturally judge the excrements from them to be superior to those from any of the other domestic animals, and such is the case. Next to man, hogs receive the best and most concentrated kinds of food, and in the most variety of shapes, as much of it is the offal from his table. This explains at once the value of hog dung; many however suppose it to be of little advantage on clay soils, on account of its non-heating qualities and its cold and soapy character; but this can be no objection when it is used on light soils, and when intended for the use of the former, it can to advantage be first composted with horse dung, the advantages of which have been frequently referred to; thus the hog dung, which is usually fine and well rotted, takes of the gases which would otherwise escape, and uses them to lighten and add stimulus to its otherwise morbid character. Hog dung is much esteemed for some particular crops, and some farmers believe it to be more efficient in growing roots than anything else; but on these points practical men differ so materially, that it is perhaps better to let the matter rest, and allow every one to hold his old opinions undisturbed, than to make an ineffectual attempt to alter a matter which is already settled in the minds of all those to whom it could be of any use.

Contrivances for the Preservation of Manure.—Although these remarks, as we have before observed, are mostly intended for the use of practical farmers, and especially for those who have small means to invest, we deem it not out of place here to make some few remarks on the most economical contrivances for the use and preservation of farm manures. We have already called attention to the liquid manure pump, which is a great acquisition to the barn-yard, and when stationary, as it usually is, a small hose to be screwed on to the spout, so as to easily disperse the liquid in different directions, will be found very useful and add little to the expense.

When large quantities of liquid manure are made, it will be found necessary to drain it into a tank built for that purpose; such a one can be easily constructed with hydraulic cement laid on the earth sides of the tank, if the soil is sufficiently firm to allow it to be dug without crumbling; and where it is very apt to crumble or fall in, it can be dug in the form of an inverted cone; thus in most soils a tank of this kind can be built at very small expense; but in the few instances where this cheap method will not succeed, they can be built at more expense with brick, stone, or wood, and perhaps more cheaply by Fowler's plan of using lime and gravel.

The plan of building cellars underneath barns is a good one, and we find it is now generally adopted, even where they are intended to be used for no other purpose than keeping manure. When this is done, ample arrangements should be made to allow the ingress and egress of the horses and wagon, so as to be put to no inconvenience about removing the dung at any time. When cellars are not provided, sheds can be put up in different parts of the yard where they will be most convenient. These may be simply built by putting posts in the ground and roofing them with boards, over the joints of which can be nailed a narrow strip or batten: plans for more expensive sheds can be easily procured; but a still cheaper way to answer the same purpose, is to put crotch posts in the ground, which can be covered with rails, on the upper side of which refuse straw or salt hay can be placed, forming a complete barrier against both sun and rain. Geo. T. Hammond.

Farmingdale, N. Y.

A PLAIN FARMER'S VIEWS OF THE NEW THINGS IN AGRICULTURE.

No. II.—FOWLER'S STEAM PLOUGH.

To Mr. Fowler undoubtedly belongs the honour of applying effectually the aid of steam as a draught-power in agriculture. The first time I had the pleasure to witness the beneficial application of it, was at the Meeting of the Royal English Agricultural Society at Lincoln, in 1854. There Mr. Fowler had one of Clayton and Shuttleworth's six-horse power engines, stationed upon the hill-side near the top of the field. With this light power he was executing drainage-work, in the lower end of the field, requiring the united strength of 180 horses; the clay being so tenacious, and the depth so great (4½ ft.), as to require nearly all this power to drag along his far-famed draining-plough at a pace not exceeding eight yards per minute. I am speaking from recollection only, having no data before me but this: I remember that Mr. Fowler himself gave me this information. From this splendid exhibition of power originated the modern idea of cultivation by steam-power, by the aid of wire-ropes and anchorages. Boydell's endless railway engine, or steam-horse, speedily followed.

I shall, in this paper, confine myself to Fowler's steam plough, as exhibited on a late occasion. The engine is of eight-horse power, and is placed on the headland: to it is attached the windlass, just as a horse is attached to a cart by a pair of shafts. The engine is between the shafts, and, by an anchorage and wire-rope fixed a-head, the whole is drawn or propelled forward as the ploughing proceeds. On the corresponding headland, on the opposite side of the field, is placed one of Worby's patent anchorages, which also, by a clever arrangement, moves forward as the work goes on. Between these two the ploughing proceeds, being drawn by a wire-rope attached to the windlass and anchorage respectively and borne up by small rollers on wheels, to prevent or lessen friction. The plough itself consists of a long frame of wood, upon which are affixed two sets of plough-bodies, complete for work, and contrived to plough upon the turnwrest principle; the shares pointing opposite ways, and balanced upon a pair of rather large wheels, which carries one set up above the soil while the other is in work. Upon reaching the end of the furrow the plough is partly shunted towards the next breadth of plough-work, the other set of plough bodies are let down, the corresponding set taken up; the plough is then guided into the work as the draught again commences. The ploughman who rides upon the frame directly brings the shares to their proper place, and guides them into and in regular work with great accuracy, by a wheel attached to a screw, which alters the "lock" of the travelling wheels. The whole of the furrow-slices lie one way, and in general are very straight and of proper inclination. The pace travelled is considerably faster than by horses (about 3½ miles per hour), consequently the work looks a little rough and is more broken, in fact is partially pulverized; but, notwithstanding, it is very creditably performed, "business-like," and of great and uniform depth, such as is seldom reached and left by the common plough, and therefore is in a better state for the subsequent tillage or harrowing, and also for the production of heavier crops, either of corn or roots. Mr. F. has made great advances since his first commencement. The independent shifting of the engine along the headland, the arrangement for carrying the windlass along with it, the position of the wire ropes, and the simplicity and perfection of the anchorages being prominent improvements. The anchorage is a clever and simple contrivance, consisting of a little waggon running upon large wheel coulters, similar to those used in the fen countries; these cut deeply into the soil, and prevent its turning over or making any movement toward the engine from the strain. The pulley, or rope wheel, is fixed beneath; and the wheel gearing above, worked by this pulley, causes the anchorage to pass along the headland. To give it additional firmness it is generally loaded with soils, stones, &c. Mr. Fowler has also made the highly important addition of scarifier tines. The mould-boards can be removed, and these tines attached; or the whole ploughing apparatus may be removed, and any other implement may be worked by the same frame. Any ordinary portable engine can work the windlass (when on its own wheels) without any alteration of the engine. The cost of working is now considerably reduced; there are no snatch-blocks; the engine-windlass and anchorage all move in corresponding unison along their respective headlands; the wire-rope only passes around one large pulley, thus requiring a much less quantity of rope; and the working parts are fewer and simpler, being the result of careful experiments. With all these advantageous additions, I have no doubt they will be able to perform most of the heaviest and hardest field-labour with greater care and usefulness, and cheaper than by horse-power. The deep-trenching or subsoiling, for instance, performed by Fowler's ploughs, cannot be done by horses in the effective way he does it—tearing up, without let or hindrance, the most tenacious soil, and throwing it on the top, from a depth of from ten to fifteen inches. Horses are of no use, comparatively, to this work. Recollect the snatching and jibbing and trouble—the breakage of gearing, whippletrees, and ploughs—we witnessed at the Lincoln meeting in trying the heavy-hand ploughs. The steady draught of the engine is admirable for this kind of work, and the uniform depth and precision is such as no horse can achieve. Take again the working of rough, exceedingly rough fallows, at many times and seasons known to every farmer, when his horses cannot travel over the soil without danger. The engine can drag his scarifiers, grubbers, drag-harrows—yes, field-rollers, and the like, with perfect ease; and if employed in drainage purposes, it is pre-eminently successful. Besides, it never tires; so that with relays of men, much work can be accomplished, precisely in the time and way most desirable; so that no season is lost, nor crop endangered. However, it is not my intention now to speak of the general advantages of steam-power in agriculture; but one can scarcely look into the subject in any way but these collateral benefits will show themselves. I hail the power, and I give all honour to Mr. Fowler for having done so much to promote it, and hope he will reap a rich reward. In my next I will be more brief, and just notice the other great inventions for promoting improvements in agriculture by the aid of steam.

No. III.—BOYDELL'S AND OTHER STEAM-PLOUGHS.

Boydell's Traction Engine is the universally-known steam-horse, which walks along upon his numerous feet (or "shoes," as they are more appropriately called, and constituting an "endless railway," as it is also called; but for why I cannot see, as they are simply large shoes, made of wood and iron, and affixed to the rim of the wheels); and as each comes to the ground, he steps forward upon it, and is so kept out of the soft earth and mud; and consequently travels along with great ease. This enables him to drag, with facility, great weights; and as these immense feet (which are about three feet in length) do not readily press into the soil, he is enabled to drag after him a set of ploughs, or any other agricultural implement. This horse, when in full work, weighs about fourteen tons; his fore-legs (or wheels) are about 4½ feet diameter, and his hind legs (or wheels) 6 feet in diameter, and altogether he is near 30 feet in length. He is so formed that he can turn, with ease, in a small space; and can be accurately guided, in work. His internal construction is such that the boiler and tubes can be adjusted to suit the gradient he is required to traverse. I saw him ascend the hill at Salisbury at a gradient of one foot in seven, drawing his water-tank, ploughs, &c., weighing seven tons. He soon got into work, and it did not appear to be a hard task or trial for him to pull three two-furrow ploughs, working six inches in depth, at the rate of two miles per hour. I made some objection to his great size and weight. Mr. B. assured me that, taking the ground he covered, it was not equal to the tread of a good cart-horse; and that he would rather make him heavier than reduce his weight. I saw him attached to Coleman's extraordinary cultivator, made expressly for his use, having eleven tines. He dragged it with comparative ease, taking 8 feet 6 inches in width, and six to seven inches in depth, making excellent work, stirring at that depth the whole surface without leaving undue marks of pressure. Here then is a motive power of great usefulness and ready adaptation. The price, however, is high—£630. The ploughs were held by ordinary ploughmen, not in frame. Mr. B. is entitled to the thanks and patronage of his countrymen for having effected an improvement so great, being, in fact, a substitute for a whole double team of cart-horses. I highly approve it.

Mr. Collinson Hall's traction engine is upon a similar principle, having the endless railway very compact, and of much less weight, not exceeding seven tons, including its supply of water. It appears to possess two boilers, one above the other: this is not the case, the upper one being in fact little more than the steam-chest, attached to the one below by an upright cylinder, containing the fire-box; and the steam is admitted into it by upright pipes from the boiler. There is no possibility of the tubes which are in the lower boiler becoming overheated by being left uncovered, as the water-level is sufficiently high to rise into the steam-chest. It is driven from both travelling-wheels, so as to ensure the greatest bite, otherwise this light engine would be defective in power. Although it is so light, yet it is worked up to 50-horse power by the enormous pressure employed, *i.e.*, 300 to 320lbs. per square inch. Of course the whole engine is made of corresponding strength to permit this strain, and to avoid accidents. The consumption of coal is very small. The mode of working it is singular, that is, by alternately pulling and pushing the plough-frame, thus saving the necessity of turning at the headlands. It was at Salisbury that I saw this engine; it there just exhibited its remarkable motive powers in its small space, but nothing more. I should have been pleased to have seen a more extended performance, as my doubts were respecting its real draft power. A powerful blood horse may pull to his full strength, but he will require nearly the bulk of a cart-horse to draw as much weight. I believe it to be a parallel case with traction engines—there must be a great weight in the engine to stand a tremendous pull. A little horse, though of greatest mettle, cannot compete with a heavy draft-horse. Mr. Hall exceeds Mr. Boydell in price—£700.

Mr. Smith shall next have my notice, as he has been indefatigable in the introduction of steam-power to cultivation, and also lays claim to being the originator of the modern improvements in steam-ploughing. Mr. Smith does not plough in the strict sense of the word plough: he breaks up the soil by a peculiar grubber of his own invention, which he works with engine, windlass, snatchblocks, wire rope, turn-tables, &c. The engine, being stationary, requires a great length of rope, which is led out to opposite anchorages, where the implement is turned by "a patent hook," his own invention, which is of considerable value, as so few can turn at the headland. The grubber does its work well; and if cultivation by grubbers is to supersede ploughing, Mr. Smith's implement is well calculated to do it. Mr. Williams employs an engine at each end of the work. This is cleverly contrived. The windlass consists of one drum, on travelling-wheels, attached to the engine (which is self-moving) by a frame of timber, so as to constitute one machine; which, with tank, coal, &c., forms one very effective anchorage. The drum is driven by a cog-wheel pinion, chain-wheel, and a short pitch-chain gearing, with a pinion on the engine-crank shaft. By an anchorage a-head, it is also, by similar gearing, made to progress along the headland as required. The engines are of seven, and six-horse power, respectively; and as they alternately pull, their weight resists the side-strain. The ploughs are badly arrranged. He has a large triangular frame of wood, upon which are hung, independently, six ploughs on a lever, with the usual addenda of chains, barrels, joints, slots, handles, guides, draft-rods, &c.: by this means each plough can be lifted out of work at the headland, &c. This frame is guided by a horse attached to shafts, and is turned by it at the ends. A scarifier is arranged to be worked in a similar way: I saw this at Salisbury, in work; the great defect was in the arrangement of ploughs; in fact they were too independent to work at all, requiring considerable weight to be placed upon them to be kept in work in the hard soil they had to contend with. There is much that is commendable about the whole scheme, which combines horse guidance with steam draft.

Mr. Fisken's steam-ploughing machine is worked by a travelling windlass, the drums alternately pay out and wind-up the stationary wire ropes as the windlass proceeds, in doing which the friction or wear of rope is trifling. The power from the engine is transmitted by a rapidly-moving light hemp cord, costing one halfpenny per yard. The ploughs, of course, proceed with the windlass, and the anchorages are safe and self-adjusting. I was most favourably impressed with the simplicity and business-like appearance of this implement at Carlisle, and augured well of its future course. I still think it deserves a high place in public favour. The small amount of labour required, compared with the duty it performs, will yet cause it to enter into strong competition with the direct hauling schemes. The great difficulty is the mode of transmitting the power.

CORN AVERAGES.—MICHAELMAS RENTS.

Sir,—The return of Michaelmas, which may be considered the termination of the farmer's year, has induced me to send you the result of the average prices of wheat, barley, and oats, for 52 weeks up to that time, viz:—

Wheat................	59s. 3¼d.	per imp. qr.
Barley...............	43s. 3½d.	,, ,,
Oats	25s. 3¾d.	,, ,,

Some years ago I prepared a return, commencing with Christmas, 1845, so as to embrace the whole period affected by the late Sir Robert Peel's Corn Bill, passed 26th June, 1846, showing the average, as well as the highest and lowest prices of wheat in each year ending Michaelmas. I have continued this return up to the present time, and as it may prove interesting to many of your readers, I beg to annex a copy.

I remain, sir, your obedient servant,
Charles M. Willich.
Actuary University Life Assurance Society.
25, Suffolk-street, Pall Mall, S.W., Oct 31, 1857.

Annual Average Price of Wheat per imperial quarter, in England and Wales, from Michaelmas, 1845, to Michaelmas, 1857; together with the Highest and Lowest Weekly Average price in each of the respective years ending Michaelmas-day.

	Average price, year ending			Highest price, week ending			Lowest price, week ending		
		s.	d.		s.	d.		s.	d.
Michaelmas	1846.	54	1	Nov. 1, 1845..	60	1	Aug. 14, 1846..	45	1
	1847..	71	3	May 29, 1847..	102	5	Sept. 18, 1847..	49	6
	1848..	51	3	Sept. 9, 1848..	56	10	June 17, 1848..	46	10
	1849..	46	7	Nov. 18, 1848..	52	3	Sept. 22, 1849..	41	9
	1850..	40	3	Aug. 10, 1850..	44	1	May 4, 1850..	36	11
	1851..	39	5	July 12, 1851..	43	6	Sept. 27, 1851..	36	7
	1852..	39	10	Sept. 4, 1852..	44	9	Oct. 11, 1851..	35	6
	1853	45	7	Oct. 1, 1853..	59	5	Oct. 16, 1852..	37	10
	1854..	72	10	Jan. 28, 1854..	83	3	Sept. 16, 1854..	52	2
	1855..	71	10	Aug. 4, 1855..	78	2	Oct. 7, 1854..	56	7
	1856..	73	1	Dec. 1, 1855..	83	1	Sept. 27, 1856..	64	4
	1857..	59	2	Oct. 25, 1856..	66	4	April 18, 1857..	53	0

The annual above averages are based on the quarterly averages for the respective periods.

MANURING WITH BRAINS.—At the Woodbury Ploughing Match a few days ago, Mr. John Daw told the following anecdote: Once having drained a field where nothing ever had grown before, I was standing near it looking at a crop I had there, when a neighbouring farmer came up. We have one or two loose farmers in our neighbourhood; one of them in fact came from Woodbury (laughter); but that is not the man I am speaking of, who came up and said to me, "That is a bootiful crop; how did ee get it, sur?" I replied, "Brains" (laughter). "Wat! manure the field wi brains?" (more laughter). The fact was I had drained the field; so I said, "Yes" (renewed laughter). He replied, "Lord, yer honer! where did ee get um?" (roars of laughter).—Sherborne Journal.

IRISH AND SCOTCH AGRICULTURE.

The statistics of Irish agriculture have been for several years before the country; and lately those of Scotland have been supplied; and they afford us the means of comparing the relative condition of the two countries, and enable us to arrive at an opinion as to whether the boast that has been applied to Scotch farming is deserved, and whether the opprobrium which has been heaped on Ireland and the Irish from a long time before that in which Byron says—

> "The Eye becomes more Irish, and less nice,"

and which has as yet hardly passed away. The statistics that are before us afford us some insight into the wealth employed in agriculture in each of the countries; and though this article may appear rather statistical, yet as the subject is of some interest and importance, we cannot avoid being *figure*-ative. We may premise that the areas of Scotland and Ireland do not differ materially: the area of Scotland is about 30,000 square miles; that of Ireland is 31,374 square miles. About two-thirds of the area of Ireland is considered arable, but less than one-fourth of the entire area is regularly farmed or brought under a rotation of crops; the quantity returned by Mr. Donelly as being under tillage in Ireland in 1857 was 5,160,089 acres. In Scotland, the quantity under tillage in 1857 is even a smaller proportion, as we find, by Mr. Maxwell's return, that the total quantity under crops was 3,536,512 acres, which would be about one-sixth of the entire area. The principal crops were apportioned as under—

	IRELAND. Acres.	SCOTLAND. Acres.
Wheat	562,581	223,152
Oats	1,978,878	938,613
Barley, &c.	246,257	277,274
Total cereal crops	2,787,716	1,439,039
Potatoes	1,146,920	139,819
Turnips	319,964	476,691
Other green crops	107,994	11,093
Flax	98,074	1,534
Meadow and clover	1,369,421	1,459,805
Bare fallow	——	18,582
Total under crops	5,860,089	3,556,572

It will be seen by the above that the grain crops of Ireland are equal to about one-half the entire extent under tillage; in Scotland they are about one-third: thus showing that in Ireland the farmers adopt a four-course system, while in Scotland they seem to have a five-course shift. The potatoes planted in Ireland are nine times as much as in Scotland, but the Scotch grow more turnips than we do. In the other green crops Ireland is far beyond Scotland. We have had nearly ten times as much as in Scotland, adding the green crops together; that is, potatoes, turnips, and other green crops. We have for Ireland 1,614,888, and for Scotland 627,503. In meadow and clover the Scotch exceed us, and they have 18,582 acres of bare fallow, of which we seem to have none. If we value the crops, after allowing for seed, at the following rates—wheat £8 per acre, oats £5, barley £6, potatoes and green crops £10 per acre, and meadow at £8, the total value of the crops of both countries would be for Ireland £33,456,568, and for Scotland £26,110,735, thus showing that the tillage crops of Ireland are worth about 17 millions sterling per annum more than those of Scotland.

We should have expected, from the greater quantity of land in Scotland not brought into tillage, and also from the increase in turnips and clover and grass land, that the Scotch had a larger quantity of live stock; but, except in sheep, which are principally put on the grass land which is not under tillage, we do not find this result. The live stock is thus classified:

	IRELAND.	SCOTLAND.
Horses	600,693	185,409
Milch cows	1,602,908	303,912
Other cattle	2,015,636	670,525
Sheep	3,448,676	5,683,168
Swine	1,252,152	146,354
Total	8,920,065	6,989,368

The Census Commissioners of Ireland adopted, in 1841, the following scale of prices; and at these rates the animals of Ireland have been since valued, viz.: For horses, 8*l.* each; cattle, 6*l.* 10s.; sheep, 22s.; and swine, 25s. each. The Commissioners make the total value of Irish live stock, in 1857, 33,684,813*l.*; and, at the same rates, those of Scotland would be 13,851,639*l.* The items are as under:

	IRELAND.	SCOTLAND.
Horses	£ 4,805,544	£ 1,483,272
Cattle	23,520,536	5,933,840
Sheep	3,793,543	6,251,485
Pigs	1,565,190	182,942
	£33,684,813	£13,851,539

It strikes us, with reference to the live stock, that the Scotch farm with fewer horses than we do in Ireland, and this leaves them a larger supply of food for their other stock; and when we see they have larger quantities of turnips and clover, we are rather surprised at the great disproportion in cattle, as they have only one-fourth of what we have in Ireland. The value of the live stock of Ireland appears to be more than double that of Scotland.

The increased quantity of potatoes in Ireland may be attributed to the much greater population which we have to support; but we think the contrast of the agricultural returns of the two countries is in favour of our own, for with nearly equal areas we have a larger extent of crops, and we have greatly enhanced value in live stock, and if the annual profit from stock be equal to their value, it would appear that the returns from that branch in this country far surpass those of our northern neighbours. We do not consider it needful to enter into much detail as to the profits from farming, but we find on minute calculation and comparison of the annual profits on cattle, sheep, and pigs, that Ireland ought on this branch of agriculture to realize nearly £20,000,000 per annum more than Scotland; and although we may not possess the manufacturing advantages of the Scotch, yet, in the greater fertility of the soil of Ireland, we are capable of maintaining a population nearly three times as great as hers, and gradually increasing in wealth, in a class of property that is less liable to financial embarrassment than any other.

COGGESHALL AGRICULTURAL SOCIETY.

The annual meeting of the Coggeshall and United Parishes Agricultural Society took place November 17th, and was well attended by the neighbouring agriculturists. The ploughing land-ditching, and show of garden produce took place upon the Bury Farm, in the occupation of Mr. E. Catchpool, who provided an excellent luncheon for the visitors. There were 31 ploughs in the field, and the work performed in excellent style; the show of garden productions by the labourers was large in quantity, and excellent in quality. In the absence of W. P. Honywood, Esq., the President, the prizes were distributed by F. U. Pattisson, Esq., and a few words of encouragement and advice were delivered to the labourers by J. J. Mechi, Esq.

In the afternoon about 40 gentlemen dined together at the White Hart Inn, under the presidency of Osgood Hanbury, Esq. After the usual loyal toasts,

The CHAIRMAN said the next toast was emphatically the toast of the evening. It was "Success to the Coggeshall and United Parishes Agricultural Society." He was highly pleased at seeing so large and influential a meeting as that now assembled, and though not all agriculturists by profession, yet they were all agriculturists by nature, for he was quite sure they would not come there unless they felt a deep interest in the society (cheers). He wished he was more skilled in agriculture, that he might say something which would interest and be of service to them, but he was glad to say his inexperience was more than supplied by the kind friends around him, who were well qualified to enlighten their minds upon this important topic. Mr. Mechi would be ready to answer any question which might be put to him; for himself he was but a young agriculturist, but at the same time he would not yield to any one in his fondness for the field as well as the shop, and he would seek to cultivate his small farm to the best of his ability. As cultivators of the soil, they had many difficulties to conflict with, arising from seasons and other causes; but they could not farm against seasons, for if they could they should be lord paramount, and strive to take the place of the Great Disposer of all things, who sent down His rain when and where He pleased. At present the prices of corn were going somewhat against them; but they must be satisfied with what they had, for they had been blessed with a large crop, and that, too, had been gathered in under the most favourable circumstances, the corn and hay harvest never having been a more favourable one than during the present year.

The CHAIRMAN proposed "Success to Agricultural Societies at home and abroad, coupling with it the name of M. de Trehonnais." (Cheers.)

M. de TREHONNAIS, in a long speech, responded to the toast, drawing attention to the striking contrast between the cultivators of the soil upon the continent of France and those of England, no such a class of individuals as tenant farmers of England being found beyond the shores of Britain. Agricultural societies existed in almost every corner of England, but they were impossible in France from the simple fact that there was no class of men like the tenant farmers from whom the ranks of such societies were filled up, and such institutions could not be brought into existence unless the ideas of the French were completely changed, and an education revolution were produced.

Mr. F. U. PATTISSON proposed "The health of Osgood Hanbury, Esq., their Chairman," which was drunk with cheers.

The CHAIRMAN responded.

The CHAIRMAN then called upon the company to drink "The health of Mr. Wm. Fisher Hobbs, the founder of their society," who had been a great example to every Englishman in farming in all its branches, whether in the breeding of stock, the attention paid to the state of his farm, and in every other way, he could only say that Mr. Hobbs was a first-rate farmer. (Drunk with cheers.)

Mr. W. FISHER HOBBS, in acknowledging the compliment, said it was true that he was in some respects the founder of the society, for he considered it was his duty to do so, and moreover, he felt a pleasure in taking an active part in promoting the welfare of that and a kindred institution. About twenty-eight years ago, there was a strong feeling amongst the farmers in that neighbourhood that each possessed the best roots in the country. As that could not be, he proposed that they should have a sweepstakes, and their first show commenced with half-a-score of roots; but very shortly afterwards, they found they had a very fine collection of roots, which attracted considerable notice. The noise of this quickly spread, and the landlords, as well as the tenant-farmers, gave their support, and then this society was established, and by the assistance of many present he was enabled to carry out the duties of honorary secretary to a society that had been carried on so successfully to the present time. A few years ago, and there were in existence the Saffron Walden Society, the Chelmsford and West Essex, the Colchester and East Essex Societies, and the Braintree Farmers' Club; but they had all dwindled away, yet the Coggeshall Society stood, and that ought to be matter of encouragement to them. He quite concurred in the sentiment which the chairman had expressed in reference to the importance of making these meetings occasions of acquiring practical knowledge, and with that end in view it would be well that the society should be resuscitated. He remembered the discussions which took place at the meeting of the Braintree Farmers' Club, when Mr. Smith of Deanstone attended, and enunciated his principles of drainage, then but little known, and when other practical questions, including the removal of pollard trees, were discussed to great advantage; and had that club continued in existence to the present moment, it would have been the means of diffusing a vast amount of important agricultural knowledge. But there was then a great prejudice, and one or two of the landlords went so far as to say that if their tenants continued members of this club they should cease their tenancy. Those were the old prejudices, but they died away, and landlords found that the more men belonged to a club, the more knowledge and information they acquired, and that they were thereby qualified to take the lead in the district in which they lived. Mr. Fisher Hobbs then alluded to several gentlemen who rendered him great assistance in the early management of the society, and expressed his opinion, from his acquaintance with French agriculturists, that there was amongst them a growing spirit of intelligence and enquiry, and unless Englishmen would go a-head they would find the Frenchman close upon their heels. He expressed the pleasure he felt at again meeting them, and concluded by proposing "The health of Mr. Pattisson, the Vice-Chairman."

In replying to the toast, Mr. PATTISSON concluded by proposing "The health of Mr. Mechi," who, after a year of office in the City, had retreated from the smoke of London, and was now enjoying the pure air of the country (cheers).

Mr. Mechi said an allusion had been made to his year of office, and his return amongst them. They all had great duties to perform, but he assured them his heart came back with delight to the pursuits of agriculture, and the varied objects of interest which it presented to the observer. He could not help comparing his position fourteen or fifteen years ago with what it was now. He then was considered little less than an impostor—(laughter)—or the promoter of some wild and visionary schemes; but he knew that he had strong prejudices to encounter, and that the truth would prevail. For instance, when he put up a steam-engine, it was thought the most absurd act which he could perform; and now he had the gratification of seeing his neighbours possessed each with his steam-engine, and he heard of one gentleman in Chelmsford having as many as thirteen, which he let out upon hire. The farmer had now found it to his interest to cast away the flail, which cost 1s., as an instrument for thrashing his corn, and to use a machine which cost £300; as notwithstanding the enormous disparity in expense, the steam-engine would produce a cheaper result. The other day he went down to Wandsworth, with Mr. Caird and Mr. Morton, to see a scheme of railway adapted for agricultural purposes, patented by Mr. Halkett, by which he promises to plough land at a cost of 1s. 7d. per acre; hoe it at 1s. 3d., and get in the harvest at 1s. per acre, carrying the manure, &c., of the farm at 1d. per ton per mile, leaving a margin for the interest of the cost of railway, which could be adapted to the farm at a cost of £24 per acre. By this scheme he might plough his land by night as well as by day if he pleased (laughter); and if it were necessary for the production of a good crop that the land should be brought in contact with the air, they would see how important it was to have a long fallow. Mr. Mechi further described the nature of this implement, and expressed his opinion in favour of its practicability. With reference to the appropriation of sewage manure to the soil, he said Professor Way had been sent to Milan for the purpose of examining the drainage, so as to adopt some scheme for saving the sewage of London, which was of immense value, but which now ran into the Thames, and was entirely lost. He believed the difficulty presented was merely a test of scientific skill, and that it only required some mechanical contrivance to accomplish the object. There were yet many things which might be done by agriculturists to great advantage, but he could not forget how much some had done, and that there was one gentleman present who every year burnt at least 1,000 tons of earth into ashes, which laid upon heavy clay land greatly increased its fertility. His experience of French agriculturists convinced him that they were not behind themselves in point of intelligence, but he was also convinced of the vast superiority of Englishmen in point of capital and means, the cry in France being "Where is the money to come from?" Upon the question of thin sowing he was glad to find a great change of public opinion in favour of the adoption of such a plan; one bushel per acre was enough seed upon his land, and though he would not lay that down as a principle, he would recommend them to try it, and he was certain of the result. He begged again to thank them, and he hoped that his friends would, as far as practicable to them, carry out any suggestion which he might have thrown out.

"The health of the Judges," which was responded to by Mr. John Hutley, concluded the toasts, and in the course of an interesting conversation which ensued, Mr. Hutley said his thrashing by flail cost 1s. 9d. and 2s. 3d. per quarter; he had pursued that course for forty years, and he thought Mr. Mechi could not get thrashing done cheaper by machine.—It was also contended, by some gentlemen present, that it was useless to drain heavy lands 3 feet deep, and that generally the fleet drains ran first.—In answer to a question by the Rev. J. W. Dampier, several gentlemen expressed an opinion upon the desirability of destroying moles wherever they existed, as they were found very injurious to drains not laid with pipes, burrowing across and effectually stopping their operation.

Other topics were discussed, and the business terminated shortly after.

THE RAPID PROGRESS OF AGRICULTURE; WHAT WILL BE ITS FUTURE?—Mr. Head, at the Penrith Agricultural Society's Show, on proposing the "Cumberland and Westmoreland Society," said:—"Whilst I have been with you to-day, my thoughts have wandered back to that period of time—I am almost afraid to say how long ago—when I remember the agriculture of the county was in a very different position. I look back and can remember in the neighbourhood of this very town of Penrith extensive tracts of waste land, which are now occupied by waving fields of corn and green crops, showing the high cultivation into which they have been brought by your skill and perseverance. The remark does not apply to this locality alone, but equally to the whole of the county; and when we go into the higher districts, there we see the green crops creeping up almost to the very summit of the hills. I have lately been in Scotland, attending a railway meeting; and there again I was much struck with the remarkable progress they have made in agriculture within the last forty years. The valley of the Clyde presents a very different appearance to what it did then. I saw crops equal to any in Cumberland, growing upon land which was before only fit for the pasturage of sheep; and upon inquiring how so great a change had been effected, I learnt that the enterprising farmers of the district had brought the manures from Glasgow, which produced this result, a distance of fifty to sixty miles by railway, and they have reaped their reward. At the same time, whilst I would accord to every one the praise they deserve, I think that Cumberland keeps pace with any other part of the country. I visit many of the agricultural districts in England, and it is often my privilege to come into this neighbourhood; and the more I see of Cumberland, the stronger is my wish to concentrate my property in my native county. By far the largest proportion of my property is in land, and therefore I naturally feel the deepest interest in its prosperity; at the same time I feel most desirous to see the success of the commerce and manufactures of our country; and whilst we rejoice in their prosperity, we may very profitably take a leaf out of their book; for if we could only invest a little money to supply the farmers with agricultural implements, possessing all the most recent improvements, we should be able to make even greater progress than we have during the last forty years, in which period the produce of this county has increased one-third in amount. In fact, it is impossible to say to what extent improvements may not be carried. Many years ago I gave it as my opinion that our climate and soil and our agricultural intelligence were equal to the adequate supply of corn for our population. I am not ashamed of what I then said, nor will I retract it; but what may be the result of our exertions is not revealed to us.

GUANO AND THE EXCREMENTS OF DOMESTIC POULTRY.

Guano is obtained from various parts of the globe, and its quality is usually distinguished by the name of the country from which it is procured. It is generally supposed to be the accumulated excrements of large quantities of sea birds, and is mostly collected on islands off the coast of Peru and south-western Africa. As a manure, it contains remarkable strength and efficiency. That obtained from the Peruvian islands is of the best quality, and is more highly fertilizing than any of the others. Its great advantage as a manure is caused by the large percentage of uncombined ammonia which it possesses. We have seen and used most of the principal kinds of guano in common use, such as Ichaboe, Columbian, Mexican, &c., and have no hesitation in saying that the Peruvian is much superior to them all, especially the Ichaboe, which contains over 50 per cent. of sand. The other two are about on a par with this as far as our experiments have gone, and we have been careful to note the results given by this class of manures for the last five years. We should, therefore, advise the use of the Peruvian in all cases were guano is used, notwithstanding the present exorbitant prices. We cannot, however, after an extensive use and observation of the effects of these manures, recommend any of them as profitable when depended upon for a series of years, especially on light soils. Their effects are remarkable on the poorest soils when first applied, but they appear to stimulate the land to its greatest capacity for a few years; they then fail of so doing, and it is impoverished to the last degree. Guano can be used on land, according to its original fertility, from five to eight years with good success, if no other manures are applied, but it will eventually reduce the land; and in many cases which we have remarked, it has never been used successfully after ten years in succession, without the intermediate use of more bulky manures.

The advantages of guano on poor soils would be much accelerated by ploughing in green crops, which would add vegetable material to the land. There seems no reason why these two systems, used in conjunction, would not produce the most satisfactory results. Every one is aware that a horse cannot thrive for any great length of time, without food of a bulky nature. Although he may be fed high on grain, he must have bulk to fill up and distend his stomach; and we also know, if he is well fed on grain, this bulk can consist of the poorest kind of fodder or straw.

The land must possess bulk, which consists of decayed vegetation, to give it its mechanical texture, or more properly its organic materials for the ready assimilation of the plant. It is readily perceived that guano, from its highly concentrated form, can contain but very little of this bulk; and that which it does possess consists of mineral and not vegetable matter. As all lands require the vegetable matter in more or less degree, it is obvious that the effect of such mineral manures will eventually reduce the soil.

By what has been previously said, it may be supposed that our intention is to prevent the use of guano: but this is not so—our object being merely to show how it can be used with advantage to the crop without injuring the land; and we think by so doing to spare many the dear-bought wisdom which is gleaned only from experience.

The great advantages of this manure can only be known to those who have used with judgment in connection with the legitimate manures of the farm. We have found the greatest benefit from its use in growing potatoes, especially when put in the drill, where the land has been previously dunged broadcast before ploughing; and in backward seasons, where the crops are behind-hand, its application often proves of the greatest advantage. It can be used on most all crops, and is particularly beneficial when applied broadcast in the spring to cereals, for which application it is better to mix it with double its weight of damp powdered charcoal, by which means it can be spread more evenly over the ground, and will be much less disagreeable to sow. The addition of a little gypsum would also be beneficial to absorb that portion of the ammonia which would otherwise be lost. It seems hardly necessary to add any caution in regard to putting the guano into close contact with the seed or plant; but as we still often hear of the failure of valuable crops from the ignorance of this fact, we will here state that its excessive caustic and concentrated power will most always, when put into close contact with the tender germ, kill it. Consequently great care should be taken to mix it well with soil around hoed crops, with the exception of potatoes, which do not appear to be injured by immediate contact with it in the drill.

The excrements of domestic poultry are the most highly concentrated of any on the farm, and are computed to be worth about half as much as Peruvian guano. As the urine is voided in a solid form with the other matters ejected from the bowels, it contains about the same ingredients as urate, or the dried urine of animals. Its value as a manure depends principally on the quality of the food from which the fowls subsist. If they were fed on meat, fish, and blood entirely, it is probable their dung would be equal to guano as a fertilizer; but where they are fed on vegetable food, the manure is much less valuable; yet it is still more powerful than any of the other farm-manures, excepting pigeon dung, which can hardly be called a farm manure.

The composition of the urine, or white part, is the same for all birds, and consists chiefly of

Uric acid	88.70	Coindet.
Ammonia	8.55	
Bone earth	2.75	
	100.00	

Fermentation and decay change the uric into bicarbonate of ammonia, so that the manure is nearly similar to commercial carbonate of ammonia with a little bone earth. No manure is allowed to decompose and waste to so much disadvantage as fowls' dung, and we are surprised to find that farmers will be so heedless of the care of this manure, and at the same time be willing to pay such exorbitant prices for guano, which is less than twice as valuable. Farmers should bear in mind that every ton of these excrements are worth thirty dollars, or at the rate of a cent and a-half per pound.

The simplest way of preventing waste, is to sprinkle the droppings two or three times a week with moist charcoal or gypsum.

Pigeon dung, whenever it can be obtained in any considerable quantity, is much prized as a manure; it is superior in quality to that of the domestic fowls. In Belgium it is much used as a top-dressing for flax; and the excrements of 100 pigeons are sold for about twenty shillings. Its immediate effect depends almost entirely on the quantity of soluble matter which it contains, and this varies according to its age and the circumstances under which it has been preserved; thus Davy and Sprengel obtained respectively of soluble matter in pigeons' dung:—

	Davy. Per cent.	Sprengel. Per cent.
Recent	23	—
Six months old	—	16
After fermentation	8	—

The soluble matter consists of a small portion of uric acid, of urate sulphate, and more particularly of carbonate of ammonia, common salt, and phosphate of potash; the insoluble mostly of sulphate of lime, phosphate of magnesia, and a mixture of sand and other earthy matters. Goose dung is less valuable as a manure than either of the preceding, as these fowls gather a great part of their subsistence from the fields, where they obtain grass and other green herbs. Their excrements are so strong, when first evacuated, that it frequently kills the sward on which it is dropped; but no fear need be apprehended from its use when mixed with absorbents, or after it has become partially decomposed. G. T. H.

—*Country Gentleman*: an American paper.

DUNSTER ANNUAL GREAT CATTLE SHOW.

The annual great market and cattle-show, so long celebrated for the excellence of the Devon stock exhibited, took place at Dunster, Somerset, on Friday, the 20th Nov. The attendance was unusually large, and included many of the most noted agriculturists and dealers in the western counties. The cattle, both fat and breeding, were exceedingly fine, and both in number and quality considerably in advance of last year's show. Mr. Corner's bull (which obtained the society's silver-cup, value £5) was really a splendid animal; and Messrs. Gibbs and Risdon's fat oxen and steers exhibited an amount of perfection and general excellence in feeding which is calculated in no small degree to uphold the high character of the Dunster district for the production of first-class beef. Mr. Leversha and the Messrs. Oatway showed some very choice things as breeding stock, which, as will be seen by the subjoined schedule, take a high position in the prize-list. The number of sheep was small, and the quality very good. The show of horses was hardly equal to former years, either as to number or quality, though there were several good and useful heavy draught horses, suitable to the requirements of a purely agricultural district. The trade throughout was brisk, and the sales were sufficiently rapid as to clear the market at an early hour. Beef of best quality ranged from 11s. to 12s. per score (to sink the offal); fat sheep were a trifle lower. The dinner of the Association was held at the Luttrell Arms Hotel, and presided over by Captain Carew, of Crowcombe Court. The company numbered about 120. The premiums were awarded as follows:—

Premium of 5*l.* offered by H. F. Luttrell, Esq., for the best pair of fat oxen offered in the market for sale, to Mr. J. Risdon; 2nd prize, 2*l.*, offered by G. F. Luttrell, Esq, to Mr. J. Risdon.

Premium of 2*l.*, offered by E. A. Perceval, Esq., for the best pair of fat steers, under 4 years old, to Mr. Gibbs, Bishops Lydeard.

Premium of 2*l.*, offered by J. Halliday, Esq., for the best fat cow or heifer, to Mr. Thomas Oatway.

Premium of 2*l.*, offered by T. Dyke Acland, Esq., for the best bull of pure breed (aged 2 years on the 1st October), to be kept within 10 miles of Dunster for the ensuing season, to Mr. Clarke.

Silver cup, value £5, by the Society, for the best bull, pure bred, not exceeding two years old, under like conditions, to Mr. Corner.

Premium of £2, offered by W. Hole, Esq, for the best breeding cow in-calf, to Mr. T. Oatway; 2nd, £1, Mr. T. Oatway.

Premium of £2, by James Hole, Esq., for the best breeding cow and offspring, to Mr. Leversha.

Premium of £3, by the Hon. P. P. Bouverie, M.P., for the best three-year-old in-calf heifer, to Mr. Leversha; 2nd, £1, to Mr. Gibbs.

Premium of £2, by the Rev. A. F. Luttrell, for the best two-year-old heifer, to Mr. T. Oatway; 2nd, £1, to Mr. Copp.

Premium of £3, by Sir H. Hood, Bart., for the best five breeding ewes under two years, to Mr. Corner.

Premium of £3, by Sir T. D. Acland, Bart., for the two best horn rams, to Mr. T. Nurcombe.

Premium of £2, by the Rev. T. F. Luttrell, for the best pen of horn ewes, two years old, to Mr. T. Nurcombe.

Premium of £2, by the Rev. T. M. King, for the best boar, to Mr. Chorley.

Premium of £1, by J. Halliday, Esq., for the best breeding sow, to Mr. Clarke.

Several other prizes, for horses, extra stock, and root crops, were also awarded.

In the course of the evening a proposition was made with a view to prevent in future years a collision with the holding of the Taunton Show of Cattle (usually held at the same period), and it was resolved that overtures were to be laid before the Taunton committee on Friday next.

IMPORTANT TO AGRICULTURAL IMPLEMENT MAKERS ATTENDING AGRICULTURAL SHOWS.—At the last sitting of the Preston County Court an action was brought by Mr. F. Mann, agricultural implement maker, against the Lancashire and Yorkshire Railway Company, to recover the sum of £1 8s. 6d. for damages sustained by goods *in transitu* from Lytham to Preston. A statement of facts was agreed upon by the advocates on both sides, so as to dispense with evidence. It appears that an arrangement was made at the last exhibition of the Royal North Lancashire Society, by which agricultural implements shown thereat should be conveyed to and from the place of exhibition at certain modified rates of charge. The plaintiff sent some goods, which, on their return by rail, sustained the amount of damage now claimed, and it was contended on his behalf that he paid the fare demanded; that he had nothing to do with the agreement made between the secretary of the agricultural society and the manager of the railway company, which was in contra-

vention of the law binding upon common carriers, and against the provisions of the Railway and Canal Traffic Act. For the defendants it was maintained that there was a contract with the secretary of the society on the part of the exhibitors, by which it was stipulated that the latter should run all risk incurred in the conveyance of implements, and that therefore the railway company were absolved from all liability. A verdict was given for the defendants.

THE AGRICULTURE OF AUSTRALIA.

With slow sales, and prices down again—with money scarce and rents due—with Napoleon opening his ports, and all sorts of things to tell against us, Agriculture still shows a sanguine, cheerful spirit. The days of her mourning, indeed, appear to have passed away. She has made herself equal to the position. After the good time they have lately had of it, of course everybody will say that the farmers, above all others, should be able to stand a pinch or two. There is, as a rule, no class of people so readily credited with prosperity. Still it must be remembered, that if the art does flourish—if Agriculture has maintained her position in the State, she has few to thank for it but herself. It is not so many years ago that great Authorities argued on the cultivation of our own soil as a matter of very little moment. It really could not much signify whether it was properly tilled or not. And on some such terms did they proceed to care for it. A farmer was a man whose opinions were to be pooh-poohed, or more openly ridiculed. In a word, British Agriculture was no great feather in our cap. And so, if there was anyone else to be served, it was of no great consequence whether she went to the wall or not!

A train of unforeseen, but happily ordained circumstances tended rather to qualify this indifference to her interest, and Agriculture had another chance. There is no one will say but that she has made the most of this. The art—that a dozen years since might have been complacently abandoned—has become a feather in our cap after all. With her limited area, Great Britain may not be able to grow corn for other nations, or even enough for herself. She is the example, however—the tutor of other states. Any people who wish to thus improve themselves, must come to us for their books and tools. There is, moreover, an increasing demand for these. No sooner does one market appear to be supplied than others open upon us. France may be somewhat satisfied for the present, but in her place we have the whole Continent to deal with. America may look like a bad customer just now; while Australia promises to be a better one than any we have yet had to welcome.

Do our farmers and breeders think enough of this? Are they quite justified in leaving so good a business, as it were, to take care of itself? We believe they are not. We think, on the other hand, that, notwithstanding low prices and shortness of money at home, there is a fine trade opening upon us from abroad. We provide, in fact, a direct remedy when engaging in it. Give your horses, pigs, sheep, and cattle, and take in return pure gold. The country that can furnish this metal so abundantly, is longing for such a system of exchange and barter. Australia is hourly becoming something better than a mere sheep-walk or gold-field. In no part of the world is the art of agriculture so rapidly developing itself, and no where do they look so certainly for aid and instruction as this colony does to us. Let her speak for herself. In the latest intelligence received, we find it thus written in the *Melbourne Argus*:—"A complete abstract of the statistical returns for this colony was published last month, and from this it appears that we have made considerable progress during the year 1856. There has been a much greater increase in the quantity of grain raised last season than was generally expected. The yield of wheat is less than the average of the previous year by four bushels to the acre, being only 23 last season to 27 in 1855; still the total increase in the produce of this description of grain alone is more than 700,000 bushels. In the quantity of oats grown for corn there has only been an increase of some 30,000 bushels, and of barley 24,400. Of hay the quantity made in 1856 is less than was saved the previous year by more than 2,000 tons; and the effect of this, coupled with the high price of horse-corn, is now to be seen in its enhanced value, this article of produce being at the present time in demand at just double the price it realized this time twelvemonth. The extent of land under hay was much greater last year than the year before; but there was a greater falling off in the crop, the average being nearly one ton to the acre less. This is to be accounted for by much of the late-sown and inferior wheat having been cut for hay when it became apparent that it would yield no corn. Although root-crops are rather uncertain in this climate, the cultivation of both mangold-wurtzel and turnips is extending—the produce of the former having been increased fourfold, and that of the latter having been doubled. Last season was an unfavourable one for most crops, and our progress in agricultural matters is better shown by the additional number of persons who have turned to that pursuit, and by the greater breadth of land under the plough, than for the actual amount of produce raised. In 1856 the number of occupiers of purchased land was 7,523, while in 1855 it was only 4,326; the number of acres under crop was 179,982, compared with 115,135 in the latter year. There has also been a considerable increase in the live stock of the colony during the year 1856."

More wheat, more barley, more oats, the cultivation of root crops extending—more persons, in short, engaged in agriculture, and more land under the plough. Without that concluding sentence, do not our readers draw a direct inference from all this? They cannot have forgotten thus early where the twelve-hundred guinea bull went to. Did not he make one in "the considerable increase in the live stock of the colony during the year 1856"? And he, after all, is but an index to what may be done. We repeat, the trade is only just fairly dawning upon us. "The character of our stock of all kinds," says the *Argus*, "is improving rapidly. Scarcely a week passes without the importation from England of thoroughbred horses, cattle, or sheep, which are purchased readily by our breeders at high prices. Within the last few days two imported Clydesdale horses have been sold at £700 and £705 respectively, and a lot of yearling Durham bulls from £180 to £200 each. One heifer, Lady Mary, fetched £300."

They are too good judges, or take their instincts too certainly from the old country, to run wild on one sort only. Although a Durham cow fetches three hundred, a Clydesdale horse makes more than double as much. In a word, there is a chance for all of us. There is no man who breeds a good animal but may have the opportunity of placing him in our colonies. We say again, as we hope with sufficient emphasis, it is a kind of business rapidly increasing, and that somebody must cultivate. The Emperor of the French, and Mr. Thorne of New York, will pale before a country cousin who means to stock a farm near Melbourne or Adelaide. Let us already, even at the outset, show some proof of what may be done here. "The only serious difficulty"—we are still quoting our friend the *Argus*—"is the high price and scarcity of agricultural labour, and this the farmers are now trying earnestly to overcome by extending as much as possible the use of labour-saving machinery." This, in a new country, and one in which there is still such a run for gold, was of course to be expected. Labour-saving machinery supplies the vacuum. There is no mistake about it. "The farmers are now," that is, just beginning to overcome the difficulty by such a means. And the effect of their just beginning to do so is, that the best customer our English implement-makers ever had is Australia. We appeal to the Ransomes, the Garretts, the Hornsbys, the Howards, and others:—did they ever have such orders as they have had for this colony within a year or two? Or was there ever such a promise of more to follow? The farmer must make his own application. There is no surer sign of good farming than good implements; and the man who uses them will be sure to have good stock to match them.

At least he will in Australia. They are already beginning to pride themselves upon what they can do. There is a stock, implement, and produce show now coming on at Port Phillip, that is to be the best ever known. There are more entries, and of a higher class. At Adelaide, again, there is a ploughing-match announced, where the best man will receive a hundred guineas. They will pit Howard and Ransome once more against each other, though without the presiding geniuses of those two houses exercising their skill in the contest. In one sentence, the Agriculture of Australia is to be permanently improved and established; and from the resources of the mother-country will that improvement be mainly effected.

This is no mere flash in the pan, no mere spurt of people overburdened with money, who would take to farming like a well-to-do tradesman, or excited amateur. On the contrary, "we may safely say that the prospects of our agriculturists are brighter than they have been for some years past. We hear nothing now of agriculture not paying in Victoria. Produce of all kinds fetches a remunerative price, and as well as we can judge by the intelligence received from all quarters, this state of things is likely to continue for some time to come."

What else is likely to continue for some time to come we have already intimated.

HIGH AND LOW FARMING, *ALIAS* GOOD AND BAD FARMING, UPON LAND OF EQUAL VALUE.

Sir,—As your journal for years has been plainly showing the way to high and good farming, I beg to inform you that within the last five years, in the south part of a midland county, which county is reckoned second to none, for high and good farming, I saw two extremes in farming upon two adjoining farms of equal value per acre. Upon the sloven's farm, the wheat crop did not average more than 2½ qrs. per acre; at the same time the diligent farmer, by his high and good farming, grew upon an average 5 qrs. of wheat per acre. The same year, I saw upon the said negligent farmer's land a close which had been a dead fallow for two years in succession, and not properly cleaned the second time or year; which reminded me of the famous old adage "Once well done is better than twice ill done." Five quarters of wheat per acre at £3 per qr., and 2½ quarters at the same price, makes £7 10s. per acre difference in the wheat crop, between good farming and bad. Then taking all other grain crops in proportion and the root crops, if any grown, makes a vast difference in the produce upon a farm of 1,000 acres, which proves at once that if good farming will not pay, bad cannot. A man cannot grow two great crops at one time—one of weeds, and the other of corn. Great crops of corn, of course, keep a man in his farm, and great crops of weeds shove or drive him out of it. At rack rent, he cannot afford to grow great crops of weeds, *alias* to farm badly. My friend, the good farmer, stated to me that he considered land lying two years in successsion a dead fallow was antediluvian farming.

Peterborough, Nov. 12th. SAMUEL ARNSBY.

NUTRITION OF PLANTS.

RESEARCHES UPON THE INFLUENCE EXERCISED BY THE SOLUBLE NITROGEN OF MANURES, IN THE PRODUCTION OF VEGETABLE MATTER.

ACTION OF PHOSPHATE OF LIME UPON VEGETATION, WITH AND WITHOUT THE CONCURRENCE OF SALTPETRE.

Translated from the French of Boussingault,

BY M. R. DE LA TREHONNAIS.

In a memoir read to the Academy, in its sitting of the 19th of November, 1855, I demonstrated how much nitrates were favourable to vegetation. With the same meteorical conditions, in soils of similar nature, helianthuses, put to the regime of nitrate of potash, have taken a considerable development; they have elaborated 9.30 grains of albumen, and produced 108 times as much vegetable matter as was contained in the seed. Without nitre, on the contrary, when the available nitrogenous principles of the atmosphere have alone intervened, the growth of the plant was more restricted. After three months' cultivation, there was scarcely 0.465 grain of albumen formed, and the dried helianthuses weighed only three or four times as much as the seed.

The experiments made upon alenese cresses have led to similar and perhaps more certain results, because in the comparative observations, the plants had both had at their disposal in the ashes of dung added, much more mineral substances than they could absorb. But was this the case with the helianthuses? We must inquire, for instance, if, on account of the rapidity of its growth, the one which had a supply of nitrate, did really meet in the soil a sufficient quantity of phosphate of lime; and in admitting that such had been the case, we should still be justified in asserting that the development of the helianthus raised without nitrate would have been more conspicuous, and that the carbon, the nitrogen, the elements of water would have been assimilated in larger proportions, if the plant had found in the soil as much potash as the saltpetre had supplied to the other helianthus.

It was to clear up these doubts that I undertook new researches. I was anxious, besides, to see a fresh manifestation of certain facts which had unexpectedly occurred in my former experiments—I mean the so decided action of the soluble nitrogenous principles upon the formation of the immediate organs and principles of vegetables—an action so manifest, that the weight of the organism elaborated by a plant gives in some measure the proportion of nitrogenous manure which it has assimilated. This is so true, that a seed so minute that the proportion of albumen should scarcely be traceable—as in *Mimulus speciosus*, tobacco, &c.—produces in a barren soil a plant the development of which does not go beyond the appearance of the rudimentary leaves, and which preserves this embryonic form during whole months, awaiting the manure indispensable to constitute the nitrogenous tissue, without which it could not grow, because it can be of no use. It is this stationary condition, this persisting germination, that for the first time I had an opportunity to observe, in 1854, upon several seeds, the weights of which ranged between 1-17th and 1-68th part of a milligrame=0.0155 grain. (*Calandrinia umbellata,* and *Campanula baldensis.*)

I have observed, besides, that extremely light seeds, weighing from 2 to 3 milligrammes, like cresses, produce, when sown upon an absolutely barren soil, slight and delicate plants—provided, however, with complete organs; but then, as it appears from all my experiments, without any exception, after several months' existence in the open air, and moreover in a confined atmosphere, the plant does not weigh much more than the seed from which it sprung; as if the extension of its organism was found limited by the quantity of nitrogenous principles contained in the seed.

Thus there are seeds which possess the nitrogenous element just necessary, without the aid of manure, to give birth to a plant excessively reduced in its dimensions, but perfectly organized, which I have designated by the name of *limit plant,* because it represents a plant constituted with the least possible matter: in it is very nearly found the nitrogen of the seed; and slight though it be, this plant blooms and bears a fruit which would want only a fertile soil to regenerate the normal plant.

The object of the experiments which I am going to describe was at first to ascertain the action of the phosphate of lime upon vegetation with and without the help of saltpetre. I have followed the development of the *Helianthus argophyllus* in the open air, sheltered from the rain, in a soil formed of pulverized burnt clay mixed with quartzy sand. The vehicle, like the pot which contained it, had been calcined after being washed in distilled water. Three experiments, A. B. and C., were prepared. In the experiment A. nothing was added to the soil. In the experiment B. basic phosphate of lime, vegetable ashes, and nitrate of potash were added. In the experiment C., the soil received phosphate of lime, vegetable ashes, and a quantity of bicarbonate of potash, containing precisely the same alkali as in the nitrate used in the experiment B.

The phosphate of lime had been extracted from calcined bones, in using agents as pure as possible, on account of the presence of magnesia. Notwithstanding this precaution, the phosphate precipitated by the potash was not free from nitrogen: 37.82 grains of the basic salt contained 0.00341 grains of it, in a state of ammoniaco-magnesian phosphate. The phosphate was always applied to the soil in a gelatinous state, such as it was obtained upon the filter after washing. The bicarbonate of potash had been prepared with carbonate of great purity. The vegetable ashes obtained from the combustion of meadow hay were very rich in white silica, without any traces of cyanure.

The plants grew in the open air, 40 inches above the turf, near a vine planted on the border of a large forest. The water used to water the plant, free from ammonia, contained about the fourth of its volume of carbonic acid gas.

The average weight of the pots was		9,300 grains'
Burnt clay		6,200 „
Quartzy sand	2lbs.	1,903 „
Total of earthy matter intervening in each experiment	4lbs.	3.403 „

Experiment A.: Vegetation of the Helianthuses in a soil containing nothing else but burnt clay and sand.

Two seeds of Helianthus, weighing 1.66 grains, were planted on the 5th of July.

20th August.—The first normal leaves were withered.

	Length.	Width.
Second normal leaves	7.90 eighths inch.	3.16 eighths inch
Third ditto	4.74 „	0.948 „

20th Sept.—The second normal leaves were withered.

	Length.	Width.
Third normal leaves..	5.688 eighths in.	1.58 eighths inch.
Fourth ditto	2.212 „	0.948 „

Signs of a blossom bud; height of the stems 4 and 5 inches.

30th September.—The aspect of the plants had not changed since the 20th. The bud had burst into a tiny yellow flower, the corolla of which was not more than ⅛ of an inch in diameter. This miniature flower was surrounded with nascent leaves.

A *limit* plant was obtained.

	GRAINS.
The dried-up plants weighed	6.076
Seeds	1.658
Organic matter developed ..	4.418

It was remarked that the plants had been pretty strong up to the 10th of August. From that time the older leaves withered, just as new ones appeared; and the vigour of the vegetation gradually declined up to the blooming.

The analysis showed in the whole of the dried-up plant:—

Nitrogen..	0.0527
In the soil	0.0310
Total	0.0837
Nitrogen obtained after 3 months' vegetation in the open air	0.0356

Valuation of the Carbon fixed during vegetation.—The matter organized during vegetation weighed 4.4175 grains, from analysis made of plants grown in the same condition. It contained at the degree of dryness to which it had been brought 0 40 of carbon, say 1.767 grains. This carbon, which could have no other origin but carbonic acid, represented 6.479 grains, or 83.345 cubic inches of acid gas.

As the vegetation lasted 86 days, we may conclude that every 24 hours, on an average, the Helianthuses have assimilated the carbon of 7.742 cubic eighths of an inch of carbonic acid gas.

Experiment B.: Vegetation of the Helianthuses under the influence of phosphate of lime, ashes, and saltpetre.

The soil was exactly constituted in weight and nature as in the foregoing experiment. There was introduced into it

	Grains.
Phosphate of lime	155.00
Ashes	23.25
Nitrate of potash successively added ..	21.07
Containing	
Soluble nitrogen	3.05195
Potash	10.11375

On the 5th of July two Helianthus seeds were sown in the soil, suitably moistened, the seeds weighing 1.6585 grains.

On the 20th of August the first normal leaves were withered.

	Length.	Width.
Second normal leaves	3½ in.	2¼ in.
Third ditto	3⅝	2⅝
Fourth ditto	3⅝	2⅝

Fifth ditto pretty well developed. Diameter of the stems 2.528 eighths of an inch.

September 10.—Height of the plants, 19 and 23 in.; diameter of the stems, 2.895 eighths of an inch.

September 20.— Height of the plants, 25 2-8ths in. and 29 2-8ths in.; diameter of the stems, 3.16 eighths of an in.

September 30.—Height of the plants, 64 and 74 centimetres; diameter of the stems, 3.16 eighths of an inch. The larger Helianthus bore a beautiful yellow flower, the corolla of which had a diameter of 3½ inches. Since the 20th of August the leaves had not sensibly changed in their appearance. The largest presented a surface nearly equal to that of a Helianthus Argophylus grown in garden soil.

The dried-up plants weighed:	Grains.	
Stems	134.152	
Leaves and flowers	109.934	
Roots	85 792	
		329.878
Seeds		1.658
Organic matter developed		328.220

Analysis made upon 46.5 grains of the matter, indicated that the 329.878 grains of dried-up plants must contain:—

	Grains.
Nitrogen	2.63035
The two seeds contained	0.04805
Nitrogen got in 3 months' vegetation..	2.58230
21.25 grains of nitrate of potash added to the soil contained:—Nitrogen ..	3 05195
Difference	0.46965

There was then 0.46965 grains of nitrogen in the soluble manure, which the Helianthus did not free: nitrogen representing 3.3945 grains of nitrate of potash, of which part was found in the soil; the other part had formed some carbonate of potash, owing to the action exercised by the organic matter of the roots, an action already recognized by M. Schlœsing, and which is accounted for by the facts recently published by M. Pelouze.

The examination of the ashes showed that the plants had taken from the soil 4.1075 grains of phosphate of lime.

Carbon fixed during vegetation.—The 328.220 grains of organic matter contained 130.8820 grains of carbonic acid. Vegetation having lasted 86 days, the Helianthuses under the double influence of the saltpetre and phosphate of lime, took every 24 hours, on an average, the carbon of 72 cubic inches of carbonic acid gas.

Experiment C.: *Vegetation of the Helianthuses under the influence of the phosphate of lime, ashes, and bicarbonate of potash.*

We have just seen that the introduction of saltpetre, combined with phosphate of lime in the soil, determined a considerable development of organic matter, and the assimilation of more than 130 grains of carbon. The Helianthuses grown in these conditions presented nearly the same aspect, and the same vigour as those which had been cultivated in the open ground. A complete manure, in which the plants found all they wanted, was then formed from the combination of nitre with the phosphate and the ashes.

The experiment C was undertaken to ascertain what share of influence upon vegetable production must be attributed to the phosphate of lime. To that effect, the saltpetre was suppressed; but as this suppression did away with a considerable quantity of alkaline matter, the nitre which had been used in the experiment B was replaced by its equivalent of bicarbonate of potash—a salt much less alkaline than the carbonate. It is, besides, the bicarbonate that is found in the dung and the urine which herbivorous animals drop upon their pasture.

The constitution of the soil, in the two experiments B and C, was as follows:

	Exper. B. Grains.	Exper. C. Grains.
Earthenware	9·300	9·300
Broken bricks	6·200	6·200
Quartzy sand..............	159·030	159·030
	174·530	174·530
Phosphate of lime..........	155·000	155·000
Ashes....................	7·750	7·750
Nitrate of potash 21·7 gr. and bicarbonate of potash .... 19·530 gr., Containing:		
Potash	10·1060	10·1060
Soluble nitrogen	3·0535	—

Everything in both soils was then equal on either side, with the exception of the soluble nitrogen of the nitric acid, which was wanting in the experiment C.

On the 5th of July, two seeds of helianthus, weighing 1·6585 grains, were sown.

On the 20th of August, the first normal leaves were withered.

	Length.	Width.
2nd normal leaves..	3·16 8ths of inch..	1·000 8th of inch
4th „ ..	2·84 „ ..	1·000 „
5th „ ..	1·58 „ ..	0·632 „

These leaves were of a very pale green.

Each of the plants bore a bud—height 43 and 44 eighths of an inch, the diameter of the stems 0·316 eighth of an inch.

On the 30th of September the plants had not changed their appearance since the 20th. Both had a yellow flower, extremely small, but well formed. Just as in the experiment A, in which nothing had been put in the soil, *limit plants* were obtained.

	Grains.
The two dried-up plants weighed........	7·7190
The seeds	1·6585
Organic matter developed	6·0605

As in the experiment A, the plants remained pretty strong up to a couple of months. Afterwards, the leaves withered towards the lower end of the stem, and the strength of vegetation rapidly decreased.

Analysis showed in the dried-up Plants and in the Remains left in the Soil:—	Grains.
Nitrogen	0·08990
Found in the seeds	0·04805
Nitrogen acquired in three months of vegetation in the open air..........................	0·04185

CARBON FIXED DURING VEGETATION.

The organic matter weighed 6·0605 grains. Admitting 0·40 for the proportion of carbon, we find 2·4242 grains for the weight of that substance, or 913·24 cubic eighths of an inch of carbonic acid gas.

Vegetation having lasted 86 days, the plants must have assimilated, every 24 hours, on an average, the carbon of 10·2334 cubic eighths of an inch of carbonic acid gas. It is within 3·16 eighths of an inch of what the helianthuses had assimilated in the experiment A.

I shall resume here the facts elicited by the three experiments:

	Weight of the dried Produce, the Seed being 1. Grains.	Vegetable Matter formed. Grains.	Carbonic Acid Gas decomposed by the Plants every 24 Hours. Cubic 8ths of an Inch.
Experiment A— The soil having had nothing..	3·6	4·4175	7·742
Experiment B— The soil having received phosphate, ashes, nitrate of potash	198·3	237·2265	568·80
Experiment C— The soil having received phosphate, ashes, bicarbonate of potash......	4·6	5·0605	10·80

ABSORBED BY THE PLANTS IN EIGHTY-SIX DAYS OF VEGETATION.

	Carbon. Grains.	Nitrogen. Grains.
Experiment A— Soil having had nothing ..	1·7670	0·03565
Experiment B— Soil having received phosphate, ashes, nitrate of potash	130·8820	2·58230
Experiment C— Soil having received phosphate, ashes, bicarbonate of potash	2·4180	0·04185

The influence of nitrous manure upon the development of vegetable organism is now proved in the clearest manner. The helianthuses grown in a soil treated with saltpetre and phosphate, reached the same growth as they would have done in a fertile soil. They assimilated 130·82 grains of carbon. Seeds containing only 0·2945 grains of albumen, produced, owing to the effect of saltpetre, plants in which there were more than 15·5 grains of that substance.

In a soil destitute of any nitrous matter, with or without the presence of phosphate of lime and alkaline salts, the helianthuses did not grow much beyond five inches. In acting upon the carbonic acid of the air scattered in or dissolved in water, they did not even assimilate 3 grains of carbon; and the nitrous principles of the atmosphere which intervened in these circumstances did not impart to the plants more than 0·0465 grains of nitrogen. These results prove that, in order to help actively vegetable production, Basic phosphate of lime and alkaline salts must be associated to a substance containing some soluble nitrogen. Farmyard manure, especially, generally offers this kind of association.

In these experiments, when saltpetre was not used, the 0·033 and 0·0465 grain of nitrogen acquired by the plants after three months' vegetation, very probably came from the ammoniacal vapours arising from the nitrous compounds existing or forming in the atmosphere. I have succeeded in detecting their presence in the atmosphere by the means I will now describe :

APPARATUS TO DETERMINE THE APPEARANCE OF NITRATES.

Six tubes in the shape of an U were placed, one after the other, in connection with an aspirator. The two first tubes, through which the inhaled air passed first, were filled with small fragments of brick, impregnated with a solution of carbonate of potash*. Afterwards came two tubes filled with alkaline pumice stones ; then, last of all, two other tubes, which contained chalk soaked with a solution of carbonate of potash. The apparatus was sheltered from the rain in a box, in which air was let in at three inches above the turf, close to a vine.

The aspirater worked almost without any interruption night and day from the 7th of July to the 7th of October, 1856. The matter contained in the tubes was kept in a constant state of humidity. The experiment being finished, a very appreciable quantity of nitrate was found in the first tube. There was still a trace of that salt in the second tube, and not at all in the others ; at all events, not the least trace was perceived, although, on the one hand, the tincture of indigo, and on the other the gold leaf, are capable of detecting clearly 0·00275 of a grain of nitric acid.

The aspired air came directly into the first tube, in which fragments of bricks, imbibed with a solution of carbonate of potash, were placed. I did not think it necessary to make it pass through sulphuric pumice stone to retain the ammoniacal vapour. What I wanted to detect was simply the presence or the absence of nitrate in an earthy substance, porous in its nature, imbibed with dissolved carbonate of potash, and submitted to a current of air. Whatever the cause may have been, there undoubtedly was an appearance of nitrate. I say appearance, and not production, because the experiment, such as it had been conducted, did not demonstrate anything else. In effect, if it be possible that the ammonia of the air which was not removed had been nitrified by the contact of the potash, mixed with the porous body by some ozoned oxygen, it is not unlikely, on the other hand, that some nitrates may have been brought with the dust, which the atmosphere always holds in suspension. Saltpetre is everywhere on the surface of the globe ; the most minute particles of the vegetable earth which the wind carries about are evidently provided with it, and the air brought into the apparatus may have deposited some upon the damp bricks of the first tubes. I must observe here, that if even air had been at first directed upon sulphuric pumice stones, in order to fix the ammonia, this means would not have prevented the nitrates from intervening, for, insomuch as they are concerned, the action of the sulphuric acid would have been confined to keeping their basis ; and the nitric acid, freed or transformed into nitrous compounds, would have been carried away by the current, and retained by the potash of the first tubes.

However that may be, and in considering solely the fact of the appearance of nitre where there was none before the passage of air, it will be acknowledged that this experiment, made above a turf near a vine, and upon the border of an immense forest, leads to a result quite conformable to that obtained long before by M. de Luca, in similar circumstances as regards the abundance of vegetation, since that eminent observer has found that there is a formation of nitric acid when air deprived of ammonia, free from dust, and taken from a greenhouse where many plants of all kinds are grown, is passed through a solution of potash.

DETERMINATION OF THE NITROGEN AFFORDED BY THE ATMOSPHERE.

A cylindric vase, made of crystal, one inch and a-half deep, and presenting a surface equal to that of flower pots, was placed near the plants under experiment. Half-a-pound of washed and calcined sand, to which had been mixed 155 grains of oxalic acid, considered as pure, but containing in reality 0,001705 grain of nitrogen, which was accounted for, was placed into it. The mixture, kept damp, remained exposed to the atmosphere. When it rained, and during the night, to avoid the dew, the vase was covered with a glass bell. After seven weeks the sand had absorbed 0,003015 grain of nitrogen, a part of which certainly formed some ammonia. This is, however, a mere information, for everything leads to the presumption that the quantity of nitrous principles which a damp soil receives from the atmosphere, depends at the same time upon the surface exposed, and the length of time of the exposure, and also upon the locality. Upon the locality : this is a circumstance which must not be overlooked, for air is not always equally pure. The impurity of rain-water demonstrates, perhaps, better than the most delicate analysis could do, the degree of impurity of the atmosphere. It is thus that the rain-water collected at Paris and Lyons contain much more ammonia, nitrates, and organic matters, than the rain, snow, fog, and dew which fall at a great distance from centres of population.*

INFLUENCE OF THE SOLUBLE NITROGEN UPON THE DEVELOPMENT OF VEGETABLE ORGANISM.

The preceding experiments have established that the phosphate of lime and the alkaline salts added to the soil, without the concurrence of a nitrous manure, do not sensibly contribute to the development of organism. The matter formed in that condition by the plant does not weigh much more than that which is produced when the ground, rendered barren by fire, contains no saline substance ; when, for instance, vegetation is accomplished with the only resources which are found in the seed, and ends only in a *limit plant.* When, on the contrary, phosphate and saltpetre are united, they act with the energy of farm-yard manure. I believe it is permitted to conclude from those facts, that the growth of a plant is subordinate to the previous absorption of a soluble nitrogenous substance, the effects of which it is not perhaps impossible to calculate : it is at least what I have attempted.

To that end divers preparations of nitrate of soda were introduced into calcined sand provided with phosphate of lime and salts of potash.

The soil, calcined and improved with phosphate, was divided and put into four flower vases, free from every organic matter.

Two seeds of Helianthus argophyllus, weighing 1.7050 grains, were placed into each of the vases.

The vegetation lasted fifty days.

The water of irrigation, free from ammonia, had about the fourth part of its volume of carbonic acid gas.

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* The fragments came from a new brick, but which had been deposited for a long time in a warehouse. They had been washed with distilled water, before they were calcined, in order to take away the nitrates which they might have contained, and which, calcination without charcoal does not always completely destroy, or rather transforms into nitrate or other very persisting nitrous compounds. The carbonate of potash had been prepared by reducing to ashes pure cream of tartar ; and care had been taken to ascertain that it did not contain the slightest trace of nitrate.

* From observations made by M. Barral, at Paris, and M. Birreau, at Lyons ; compared with those I have obtained at Liebfurnenberg, and those of Messrs. Lawes and Gilbert, registered at Rothamstead.

The plants were grown in the open air, sheltered from the rain and dew.

The soil of the vase No. 1 had no nitrate of soda.
The soil of the vase No. 2 had 0.310 grains.
The soil of the vase No. 3 had 0.620 ,,
The soil of the vase No. 4 had 2.480 ,,

During vegetation the plants remained very strong, the leaves were of a fine green. Here are their respective dimensions at the end of the experiment.

			Height.	Length of the largest leaf.	Width of the largest leaf.		Weight of the dried-up plants.
No. 1	without nitrate.		4 inches	1½ inches	4.70	8ths of inch	7.055 grs.
2	with nitrt.	0.310 gr.	4½ inches	2 inches	6.30		13.000 grs.
3		0.620 gr.	4⅝ inches	2⅝ inches	1 inch		19.022 grs.
4		2.480 gr.	9 inches	3⅝ inches	1½ inch		52.545 grs.

By taking off the weight of the seeds from the weight of the dried plants, we find that the organic matter elaborated during vegetation was as follows:—

Organic matter formed by No. 1, not having received any soluble nitrogen	6.045	grains.
By No. 2 having received 0.05115 grain of soluble nitrogen	11.2685	,,
By No. 3 having received 0.10230 grain of soluble nitrogen	17.515	,,
By No. 4 having received 0.4312 grain of soluble nitrogen	50.84	,,

The influence of the soluble nitrogen was manifest, and it was not without astonishment that in the experiment No. 2 we found that 0.05115 grain only of nitrogen introduced into the soil was sufficient to increase two-folds the organic matter of the Helianthuses; also the proportion of the weight of the seed to that which was : : 1 : 4.6 of the dried crop, in the cultivation of which no nitrate had been used, became—

: : 1 : 7.6 in cultivation No. 2, as above.
: : 1 : 11.3 in cultivation No. 3, ,,
: : 1 : 30.8 in cultivation No. 4, ,,

The analysis showed in the helianthuses No. 1 grown in the soil without any nitrate of soda.

Nitrogen	0.08215 grain.
In the seeds there was, nitrogen......	0.05115 ,,
Nitrogen generated in fifty days' vegetation...........................	0.03100 ,,

For the plants grown in a soil to which nitre had been applied, the quantities of nitrogen found led to the following results:—

	Nitrate added.		Nitrogen contained in the nitrate and the seed.		Nitrogen. found in the plants.
Helianthus No. 2,	0.310 gr.	..	0.10230 gr.	..	0.09610 gr.
Helianthus No. 3,	0.620 ,,	..	0.15500 ,,	..	0.15035 ,,
Helianthus No. 4,	2.480 ,,	..	0.46035 ,,	..	0.38905 ,,

Traces of nitric acid were found in the soil of experiment No. 2 and No. 3. In the soil of experiment No. 4 there was a little less than 0.465 grain of nitrate of soda; and in none of the plants submitted to the action of that salt, did the nitrogen assimilated by the organism exceed that which the nitrate had introduced.

What is most striking in this second series of experiment is to show not only as much a nitrogenous substance introduced into the soil contributes to the growth of the plant, but to demonstrate besides how much the organic matter elaborated by the plant increases through the intervention of the smallest quantity of soluble nitrogen.

One may also convince himself by examining the figures expressing the quantity of carbon fixed by the helianthus, that the decomposition of the carbonic acid gas was so much the more conspicuous, as the plant had at its disposal a greater quantity of nitrate of soda, or, in other terms, more nitrous manure.

Experiments.		Nitrogen contained in in the seeds weighing 1.705 grains.	Nitrogen introduced by the nitrate.	Organic matter formed in fifty days' vegetation.
No. 1,	..	0.05115 gr.	0.00006 gr.	6.1535 gr.
No. 2,	..	0.05115 gr.	0.05115 gr.	11.1600 gr.
No. 3,	..	0.05115 gr.	0.10230 gr.	17.5150 gr.
No. 4,	..	0.05115 gr.	0.40920 gr.	50.8400 gr.

Experiments.	Carbon contained in the organic matter.		Average of carbonic acid decomposed in 24 hours.
No. 1	2.4645 grains	..	2⅓ cubic inches
No. 2	4.4640 ,,	..	4½ ,,
No. 3	7.0060 ,,	..	6⅝ ,,
No. 4	20.3360 ,,	..	17 ,,

From the whole of these researches it follows—

1st. That phosphate of lime, the earthy and alcaline salts indispensable to the constitution of plants, exercise, however, no action upon vegetation, except when they are combined with matters capable of yielding soluble nitrogen:

2nd. That those soluble nitrous matters which the atmosphere contains, intervene in too small a proportion to determine, in the absence of a nitrous manure, an abundant and rapid vegetable production:

3rd. That saltpetre combined with phosphate of lime and silicate of potash, acts as a complete manure, since helianthuses grown under the influence of that mixture, for vigour and size bear a comparison with those which had been grown upon a garden strip strongly manured.

I will add, in conclusion, that it is very remarkable to see a plant going through all the phases of vegetable life, germinate and ripen—in one word, attain its normal development, when its roots are growing in a calcined sand containing, instead of organic *debris* in a state of decomposition, salts of a great purity, combined substances perfectly defined, such as nitrate of potash, basic phosphate of lime, alkaline silicates; and to ascertain that by means of those auxiliaries, all taken from the mineral kingdom, this plant progressively increases the weight of its organism by fixing the carbon of carbonic acid, the elements of water, and by elaborating with the radical of nitric acid, albumen, caseine, &c., that is to say, the nitrogenous principles of milk, blood, and muscular flesh. On the other hand, there is probably more analogy than may be supposed between the salts I have just mentioned and manure. Dung, in which Braconnot did not find less than fourteen substances, singularly changes its constitution when it has sojourned in a soil suitably pulverized. Fermentation persisting in the soft parts, the slow combustion which humus, black earths, those advanced terms of the decompositon of organized bodies and the dejections of animals undergo. The action which air, water, soil, exercise upon all these matters, are, after all, so many causes why dung gives to plants alkaline and earthy salts, phosphates, and, as recipients of soluble nitrogen, nitrates and ammonia.

THE TRIALS OF THE STEAM-ENGINE.

Suggestions sent by Implement-makers and Judges in Answer to the Circular Letter of the Royal Agricultural Society.

SUGGESTIONS

RESPECTING TRIAL OF ENGINES, &c., AT THE ROYAL AGRICULTURAL SOCIETY'S MEETINGS.

That the trials of each particular class of implements be triennial, as at present adopted by the Society.

That the present prize system be abolished, and, instead, a series of class or orders of merit be substituted.

That certificates containing the judges' award, as well as a full report of the trials, be handed to each competitor on the morning of the first public show-day.

That no engine or other implement be allowed to compete that is got up for a trial and for that only.

That in making the awards the judges shall pay as much attention to the price, proportions, simplicity of design, and excellency of workmanship and material as to the duty performed.

That competitors in the steam-engine class be allowed to bring any engine not exceeding eight horses' power, and that the standard of power be 33,000 lbs. lifted one foot high per minute.

The engines to be tested by the most improved self-acting friction break that can be obtained, the judges taking care that the one selected is one that has been previously well tried and proved by competent parties to be correct.

That such testing apparatus necessary for all the trials be on the ground, and in perfect working order, the day before the commencement of such trials.

That competitors be not limited to the size of steam-cylinder for a given horse-power, or in their boiler dimensions.

That no flue-tubes in the boiler of a competing engine be inserted with less than one clear inch space between them, or less than two inches diameter.

That the water spaces round the fire-box, if a locomotive one, shall not be less than two inches wide.

That no expansion gear be used other than what is obtained by lap on the common slide, or some equally simple arrangement.

No hot-water apparatus requiring more attention than the ordinary pump.

That it be at the option of the judges to have any engine taken apart for examination after the trial.

That the working pressure in steam-engines be increased to 50lbs. instead of 45lbs., as heretofore, and that the judges may have the power of proving each boiler up to 150lbs. per square inch by hydraulic pressure, if they see fit.

North Wilts Foundry, Devizes. BROWN AND MAY.

TO THE EDITOR OF THE MARK LANE EXPRESS.

DEAR SIR,—Herewith is copy of our letter to the Secretary of the Royal Agricultural Society, on the subject of trials of steam engines and thrashing machines.

We remain, dear Sir, yours truly,
CLAYTON, SHUTTLEWORTH, & CO.
Stamp End Works, Lincoln, Nov. 17, 1857.

[Copy.]

JAMES HUDSON, ESQ., SECRETARY TO THE ROYAL AGRICULTURAL SOCIETY, LONDON.

DEAR SIR,—In adjudicating upon steam engines, it is well known that for some years past, "racing" or high duties have been considered the standard of excellence, and that the attention of the judges has not been directed to any other point. The consequence has been that boilers have been made with an enormous number of tubes and very small water spaces, thus rendering them totally useless for all practical purposes (the committee may satisfy themselves on this point by referring to the drawings of the Carlisle boilers); this has been done to such an extent that first-class makers have in many cases (before selling the engine) put in a fresh fire-box with a less number of tubes, as they dare not risk their reputation by sending out such boilers, which cannot be lasting and durable.

Now, we think it desirable that the Society should have a condition to prevent such boilers being made; and while on no account desiring to recommend anything which would fetter the skill and ingenuity of manufacturers, we contend that such a condition would not have that tendency; it requires no greater amount of skill to construct a boiler with 90 tubes than one with only 45. We would suggest that the engine should be made in accordance with each manufacturer's own views; and would further suggest that the tabular form of points adopted in the trial of thrashing machines be also used for steam engines—say, let excellence of material and workmanship be one point; economy in the consumption of fuel another; simplicity of construction with due regard to the making of the vital or principal parts accessible for cleaning and repairs another; portability another; and price the last: making in all five points for consideration, perfection in each point being represented by a number.

The conditions to prevent boilers being made with an unnecessary amount of heating surface, should be thus—say that no boiler should have more than 20 ft. of heating surface to the horse power, measuring the whole surface of the tube, and that each tube should not be less in thickness than No. 12 gauge, or any other number or amount which the committee may deem best.

Engines should be tried under a covered shed, and coals should be broken and made as uniform in quality as possible, throwing out all the bad pieces.

We remain, dear Sir, yours truly,
(Signed) CLAYTON, SHUTTLEWORTH, AND CO.
Stamp End Works.
Lincoln, Oct. 31, 1857.

GENERAL RECOMMENDATIONS

FOR CONDUCTING THE TRIALS OF THE MACHINERY, FOR WHICH PRIZES ARE TO BE OFFERED BY THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND, AT THE SHOW AT CHESTER, TO BE HELD IN JULY, 1858.

1st. The list of prizes should be accompanied by definite conditions as to the terms of competition, and the principle of adjudication fully explained. Exhibitors should be furnished with full particulars of the diameters and speed of the various driving drums attached to the Society's dynamometers, by which the different machines will be tested, and also informed the quality of coals to be used in the trials of steam engines.

2nd. That the system adopted in the trials of combined machines of classifying the various qualifications of the competing machines under different heads in a tabular form, be extended to the trials of steam engines, and all machines for which prizes are offered, it would answer a good purpose if these tabular forms, showing the amount of credit that would be accorded to competitors for comparative perfection attained under the several heads, were forwarded to exhibitors as soon as the entries are received by the society, so that in preparing machinery for competition they may be aware of those particular qualifications most desired by the society, and for which they would receive the largest amount of credit at the trial.

3rd. That after the trials copies of these tabular forms should be furnished to each competitor.

4th. We recommend the different qualifications, the competing machines, and the amount of credit accorded for comparative perfection attained under each head, to be arranged as follows—

PORTABLE STEAM ENGINES.

In addition to the tabular form used in these trials, hitherto stating the actual power, consumption of fuel, price, &c., of the competing engines, a separate form should be provided, with the qualifications for adjudication arranged, and the amount of credit due to each represented by points, thus—

Durability combined with excellence of materials and workmanship	10
General excellence of design, as affecting the simplicity of the engine, and rendering the working parts easy of access	10
Economy in the consumption of fuel	8
Portability	6
Price per horse-power	3

Exhibitors should *not* be restricted as to the construction or dimensions of the engines or boilers.

Each engine with the dynamometer should stand under a covered building during trial.

The coals to be consumed by the competing engines should be carefully picked over, and broken to pieces of a uniform size; all dirt and rubbish should be thrown out, and each competitor be served from a quantity of coal of uniform quality.

In conducting the trials of fixed engines, the same system may be adopted; each competitor should send to the show such a boiler as he would supply with the competing engine, and after the trial of the engines on the dynamometer, if no means are provided for ascertaining by experiment the evaporating power of these boilers, the judges should carefully examine them and give credit for their various points of excellence, as in the tabular form suggested for the portable engines, substituting for "portability," comparative cost of erecting the necessary building, constructing the flues, and fixing the boiler, and the probable cost of removing it if required—this is a very important point in a farmer's engine.

THRASHING MACHINES.

The same tabular form should be continued as was adopted at the society's trial at Carlisle.

The corn to be thrashed should be carefully selected of a uniform quality.

The trial of each machine should continue for at least half an hour.

That the produce delivered by each machine during the trial should be carefully weighed, as no correct estimate of the amount of work performed can be obtained by any other means.

DRESSING MACHINES.

A better method of ascertaining the merits of these machines than that adopted by the judges at Carlisle, cannot be suggested. The following tabular form may be adopted with reference to the points for adjudication—

Duty done in reference to power	15
Quality of work done	15
Durability and facility for repair	14
Simplicity of construction	10
Excellence of material and workmanship..	10
Price	5

CHAFF CUTTERS.

Every competing machine should cut the same length of chaff, and exhibitors should be informed the length decided on by the society, as long before the trial as possible, and no work should be recognised by the judges which exceeds the stipulated length.

The same tabular form, as recommended for the dressing machine, may be used to advantage for the chaff cutters.

Leiston Works, GARRETT & SONS.
Saxmundham, Nov. 2, 1857.

JAMES HUDSON, ESQ., 12, Hanover-square, London.

Sir,—In compliance with the invitation of the Royal Agricultural Society to express an opinion as to the future prizes for steam engines, and fearing I may be prevented attending to-morrow, I beg to hand you the following observations, to lay before the Council:

Looking at the late trials of steam engines, it will be observed how seldom, if ever, have the prizes for fixed and portable engines been awarded to the same makers. The trials for fixed engines being made with the society's boiler, puts every maker on the same level, and shows which is the best engine, and the comparative merits of each; hence we may assume that if the maker of the prize fixed engine fails in taking the prize for the portable engines, the deficiency must be in the boiler and connections. Messrs. Ransomes have for some years past taken the prize for fixed engines, while that for the portable engines has, I believe, invariably been given to the engine with the boiler of the largest capacity. Take for instance the Carlisle trials, the prize engine had a boiler of nearly double the capacity of that used for trying the fixed engines, and was only called an *eight*-horse power.

The tube surface of 8-horse commercial engines varies from 120 to upwards of 200 feet area of tube surface only, while the following table, taken from the entries of the society's meetings, shows a variation of from 5 to 10 square inches of piston per horse power:

	Cylinder.	Ins. stroke.	Revolutions.
Six-horse engine ..	6¼	10	120
" " ..	8⅜	13½	130
" " ..	7¾	12	120
Seven-horse engine..	7	11	150
" " ..	8½	12	130
" " ..	8½	14	120
Eight-horse engine..	8¼	14	120
" " ..	9	12	120
" " ..	10	24	60
" " ..	7¾	12	130

Shewing a great discrepancy in the area of the cylinder, proportionate stroke, and velocity of the working parts; in fact, as much difference in the engines as in the boilers themselves.

I think it is necessary to establish a *double trial*, first as to the capacity of the boiler, next as to the duty of the engine. I would suggest that a hand-pump fitted with one of Siemens's (or other acknowledged) water meters be attached to each portable engine, either at the suction-clack or elsewhere, the usual quantity of coal, 14 lbs. per horse power, being allotted to each engine, and the water-level maintained; the evaporative power of the boiler will be found in the number of pounds of water evaporated by each pound of fuel, no artificial draught being employed, the result must be indisputable.

On the second trial being conducted as hitherto, the duty of the engine and boiler will be found, and by comparing the two results, the power absorbed by the machine itself by back pressure friction, &c., will be ascertained.

These experiments will form a guarantee for good workmanship, and the report of the judges giving the result of the double trial, will not award the prize to the excessive boiler surface, but to the general efficiency and proportion of both engine and boiler.

It will be necessary for the council to establish some fixed data for the proportions, whether 10 inches of piston and 20 feet of heating surface, with the Admiralty rule of 247 feet for piston per minute, and three-fourths of a square foot of fire-grate surface per horse power, or such other proportions as may by them and their engineer be deemed most suitable; these are, however, about the proportions of engines built on the Clyde for 50lbs. pressure.

Simplicity of arrangement, with due regard to strength and lightness, must not be lost sight of, and the price and weight should form an item of consideration, particularly in portable engines.

Should these remarks be found worthy of the consideration of the council, and lead to the adoption of a rule for commercial engines, it will prove a boon to the farmer, and I shall have the satisfaction of knowing that my ideas are borne out by others.

I am, Sir, yours very respectfully,
JOHN GRAY, of John Gray & Co.
Uddingston-by-Glasgow, Nov. 2nd, 1857.

[Copy, as forwarded by Messrs. Holmes and Sons to the *Mark Lane Express.*]

Prospect Place Works,
Norwich, Norfolk.

GENTLEMEN,—We beg to hand you our opinions and suggestions relating to trials of steam engines, &c., as follows:

1st. ADJUDICATION BY POINTS.—That the system of establishing the excellence of any machine or implement by summing up the number of points it obtains, in reference to certain qualifications clearly defined in the *Society's Sheet of General Conditions,* as was exemplified in the trials of steam thrashing machines, should be extended to other machines as far as possible.

2nd. PUBLICATION OF THESE RECORDS.—That the results thus arrived at should be tabulated, and given in printing or writing to each exhibitor who competed for a trial, so that he may be able to append them to his machines which have been tried, on the first public day of exhibition.

3rd. SPEED OF DRUMS.—Exhibitors should be informed, at least one month before the trials take place, of the exact diameter and speeds of the various fly-wheels and other driving drums by which the various machines are to be driven when under trial, whether power or hand machines.

THE SOCIETY'S CONDITIONS IN FULL.—These should be made known to each exhibitor much earlier in the year than they are at present.

POINTS OF MERIT.—We think that the points on which the judgment should be based, are as follows :

STEAM ENGINES.

CLASS I. 1ST DIVISION, PORTABLE.—The tabular report should contain all the particulars it does at present. And the points for adjudication should be—

1st. Durability, thickness of tubes, and metal between tube holes in furnace.
2nd. Simplicity of construction and facility of repairs.
3rd. Excellence of material and workmanship.
4th. Duty done in reference to coal burnt.
5th. Portability.
6th. Price per horse-power.

We should also recommend—

1st. That the trials take place under a shed, covering the engine, and also the dynamometer.

2nd. That the coal used in the trial should be an average quality of bituminous coal, and not anthracite. That the coal be well broken, and the rubbish picked out before weighing any of it out for trial.

SECOND DIVISION, FIXED ENGINES.—That the above plan of trial should be carried out, subject to the alterations necessitated by the difference between the two classes of inquiries, for instance, omission of "Portability" as a point of merit.

THRASHING MACHINES.

QUALITY OF GRAIN.—That care should be taken to have the sheaves served out to the different machines as uniformly dry as possible, and of uniform quality and bulk.

LENGTH OF TRIAL.—That every machine should be tried at least half-an-hour.

POINTS OF MERIT.—They should be continued as they were at the Society's last trial.

Nov. 2, 1857. HOLMES & SONS.

[Copy, as forwarded by Messrs. Hornsby and Sons to the *Mark Lane Express.*]

SUGGESTIONS

IN REFERENCE TO THE CONSTRUCTION AND TRIALS OF STEAM-ENGINES AND OTHER MACHINERY TO BE EXHIBITED FOR PRIZES AT THE COUNTRY MEETING OF NEXT YEAR.

GENERAL RECOMMENDATION.

That the system at present adopted of a tabular form of report, in recording the results of the trials of combined thrashing and winnowing machines, should be, as far as practicable, extended to other implements.

That these reports should be in the possession of each competitor on the first morning of the public exhibition.

STEAM-ENGINES.

That in awarding the prizes for portable steam-engines, the judges should be instructed to take into consideration the various points of excellence in the competing engines in the following order :—

1. Durability.
2. Construction and workmanship.
3. Consumption of fuel as indicated by the dynamometer.
4. Portability and weight per horse-power.
5. Price per horse-power.

That a tabular form, as in the case of the thrashing-machine trials, be adopted, and that the numbers attached by the judges to each head in the following form represent the amount of credit given to each exhibitor for perfection attained under the several heads.

For example: Let perfection in the several heads mentioned below be represented by the following figures :—

Exhibitor's name	
Durability	12
Construction and workmanship	10
Consumption of fuel	8
Portability and weight per horse-power ..	8
Price per horse-power	6

That a certain amount of heating surface be allowed per horse-power in portable engines, and exhibitors not permitted to exceed that amount whatever may be fixed upon.

That in tubular boilers no tubes be allowed to be nearer together than one inch.

That no exhibitor should be allowed to compete with steam-engines above a certain power, say eight or nine horse; and we would remark for your guidance that, as far as our manufactures are concerned, we have very little demand for portable engines of less than eight-horse power. We should, therefore, strongly recommend your sanctioning the power to extend either to eight or nine horse.

That the coals to be used be broken up and mixed, and any of an inferior quality thrown out, so as to produce uniformity as much as possible; and each exhibitor be served from the same heap, and the greatest care taken in weighing, so that no mistake can possibly occur.

We further recommend that in conducting the trials, the weight of water evaporated by each engine while under trial be ascertained.

That it is most desirable and essential that all the engines should be tried under a covered building.

THRASHING MACHINES.

That in addition to the present system adopted for ascertaining the merits of combined thrashing machines, due attention should be paid to their strength and durability, as it is possible to make a machine run light during the trial, and so gain a point in that respect, but still by doing so the spindle-bearings, &c., will be found considerably too light to stand the wear and tear of farm-yard service for the length of time desirable.

That in the trial of thrashing-machines, it is essentially important that the sheaves should be supplied to the several competing machines, as far as possible, in the same condition as regards dryness, quality, and bulk.

That the machines should be under trial for a longer period than at any former meeting, say for half an-hour, which we presume to be as long as can be allowed.

(Signed.) RICHARD HORNSBY & SONS.
Spittlegate Iron Works, Grantham,
Lincolnshire, Oct. 31, 1857.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—I did not take a copy of my letter to the Secretary of the Royal Agricultural Society in reference to the trial of steam-engines and machinery; hence, as I cannot give a *verbatim* copy from memory, this matter must just rest where it is. I am glad to find that this question of trials is taken up so spiritedly by your paper.

I am yours respectfully,
JOHN PALMER.

P.S.—In the Highland Society's *Journal* for October they neither have any *fixed conditions* of trial, nor do they give any report of the so-called trials of implements, steam-engines, &c. Show the "braw" Scotchmen that the eyes of Englishmen are upon them. J. P.

TO THE EDITOR OF THE MARK-LANE EXPRESS.

RESPECTED FRIEND,—We avail ourselves of your invitation to forward copy of our suggestions for the conditions under which engines and machines should be submitted for test and adjudication to the Chester Meeting of the Royal Agricultural Society. In doing so, we have mainly kept in view the object of these trials, which ought to result in the marking, not only upon one machine, but upon several that may be worthy of such notice, the measure of the value that the judges may consider as fairly attaching to each, *as machinery the most practically suited for the purchase and use of the farmer.*

This we believe will be best obtained by adopting the principle of making the judges' records upon a tabulated system of the various points considered essential, and marking by a higher or lower figure under each head the degree of excellence to which in each case the engine or machine before them may have attained. This mode of determining the comparative merit is not new, and has not unfrequently been adopted by the judges in their tests of some classes of implements; and in some instances, these tabulated statements of points have been published six months afterwards in the Society's *Journal* reports. But we submit that very great advantage would accrue, if immediately upon the judges having determined their award of prizes, each exhibitor should be furnished with the tabulated statement filled up, which relates to his own implement. By this, the exhibitor would at once see the points in which his implement is held to be defective, and his attention be promptly turned to improvement.

With the exception of those which are selected for prizes or commendations (which would naturally be published in the judges' report), it might be optional with the others whether the reports indicating inferiority should be made public; but at all events, if it should be found that in some respects the machine of any maker involved some point of high excellence, although reduced below the point of gaining a prize, by a balance of defects on other points, its comparative value might be fairly seen, and the exhibitor take the benefit of the knowledge.

We note the remark of the chairman of the Implement Committee of the Royal Agricultural Society of England, as published in your report of the Council Meeting, that the suggestions of the exhibitors were very similar to the present practice of the Society. The difference lies mainly in this, that the system of adjudicating by a scale of points, now adopted for *one or two classes* of implements should be the invariable practice for *all classes,* and that instead of a publication of these at a remote period, every implement exhibitor competing at the trials should be furnished with the results as affecting his own implement as early as the judges are prepared with their awards. This would involve but a small amount of labour or time, as the tabulated forms may be printed beforehand, and would only require the insertion of the figures, unless the judges should desire to make any remark by way of note.

Trusting we have not drawn too largely on your space, we remain, respectfully, RANSOMES & SIMS.

Ipswich 11th Mo. 13, 1857.

GENERAL RECOMMENDATIONS.

1ST. ADJUDICATION BY POINTS.—That the system of establishing the excellence of any machine or implement by summing-up the number of points it obtains in reference to certain qualifications clearly defined before commencement of the trial, as is at present exemplified in the trials of steam thrashing machines, should be extended as far as possible to other machines.

2ND. PUBLICATION OF THESE RECORDS.—That the results thus arrived at should be tabulated and given in printing or writing to each exhibitor who competes for a trial, so that he may be able to append them to his machines which have been tried on the first public-day of the exhibition.

3RD. SPEED OF DRUMS, &c.—Exhibitors should be informed, at least one month before the trials take place, of the exact diameters and speeds of the various fly-wheels and other driving drums, by which the various machines are to be driven when under trial, whether power or hand machines.

SPEED.—All machines to be used by hand-power should be limited to some certain speed—say, fifty revolutions per minute.

THE SOCIETY'S CONDITIONS IN FULL.—These should be made known to each exhibitor much earlier in the year than they are at present. This would be more likely to ensure improved machines being brought for competition.

POINTS OF MERIT.—We think that the points on which the judgments are based should be as follows:—

CLASS I.—STEAM ENGINES.

1ST. DIVISION: PORTABLE.—The tabular reports should contain all the particulars it does at present, viz.—

Name
Stand
Article Number
Price
Horse-power
Fuel, and time raising steam;

and also

Coals burnt to do the whole work
Time running
Coals burnt per hour
Coals burnt per horse-power per hour
Water evaporated.

And the points for adjudication should be

	Represented by Points.
1st. Durability	20
2nd. Simplicity of construction and facility of repair	20
3rd. Excellence of material and workmanship	20
4th. Duty done with reference to coal burnt	20
5th. Portability	10
6th. Price per horse-power	10

AND WE WOULD FURTHER RECOMMEND—

1st. That no restrictions be placed upon the exhibitors, as to the dimensions or construction of the engines and boilers with which they compete, except that they shall not work at any higher pressure than that determined by the Society and published on the condition sheet.

2nd. That every competing engine should be tried to its utmost capacity at the maximum pressure allowed by the Society, no matter at what nominal power it may be entered.

3rd. That the trials take place under a shed covering the engine and also the dynamometer.

4th. That the coal used in the trials should be an average quality of bituminous coal, and not anthracite.

5th. That the coal be well broken, and the rubbish picked out before weighing any of it out for the trials.

2ND DIVISION: FIXED ENGINES.—That the above plan of trial should be carried out subject to the alterations necessitated by the difference between the two classes of engines; for instance, the omission of portability as a point of merit.

CLASS II.—THRASHING MACHINES.

THE QUALITY OF GRAIN.—That care should be taken to have the sheaves served out to different machines as uniformly dry as possible, and of uniform quality and bulk.

LENGTH OF TRIAL.—That every machine should be tried for at least half-an-hour.

(This is about the total time they would be tried in three years, if the old plan of annual trials was continued.)

POINTS OF MERIT.—These should be continued as they were at the Society's last trial.

CLASS III.—MILLS OF DIFFERENT DESCRIPTIONS.

QUALITY OF WORK DONE.—Care should be taken to equalize the produce of the different competitors' mills as much as possible; and with that view the plan adopted by the Society at Lincoln should be henceforth renewed, viz.:

Let the judges cause any one of the mills in the class under trial, whether it is a competing mill or not, to crush or grind a standard sample, and let each competitor have ample time to get his mill adjusted to produce a sample equal to the standard. When the mill is so adjusted, let the trial proceed, and the points for adjudication be as under:—

	Represented by Points.
1st. Duty done in reference to power	25
2nd. Quality of work done	25
3rd. Durability and facility of repair	20
4th. Simplicity of construction	15
5th. Materials and workmanship	10
6th. Price	5

CLASS IV.—CHAFF CUTTERS.

QUALITY OF WORK.—Every machine entered for competion, or selected by the judges for trial, should, during the trial, cut the same length, which should be announced in the

Society's conditions, and should be a good average length, say ⅜ inch.

The best way we know to ascertain the exact length any machine cuts is to insert in the feed a small strip of pine or soft wood; this strip advances with the feed, and the pieces cut from it show the exact length the feed advances each time.

POINTS OF MERIT:

	Represented by Points.
1st. Duty done in reference to power	25
2nd. Evenness of cut sample	25
3rd. Durability and facility of repair......	20
4th. Simplicity of construction	15
5th. Materials and workmanship	10
6th. Price..............................	5

NOTE, which was not sent to the Council, but is adde now, as being likely to explain more clearly our views :—

"The particular figures which we have attached to each qualification of merit are simply intended to show our idea of their relative importance, and not by any means as absolutely essential to be preserved as we have written them. The Society's consulting engineer, or the judges, will probably determine the exact ratio between the different qualifications of merit by a careful consideration before the Society's conditions are issued. We have chosen 100 as the sum total of the points in preference to a smaller number, in order that the judges may have more power exactly to discriminate between the merits of different machines tried in the same class." RANSOMES & SIMS.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—I enclose you copy of Mr. Samuelson's letter, with reference to the trials of implements at the Royal Agricultural Society's annual shows. You will see that Mr. Samuelson's remarks refer to the trials of implements *generally*, and not in particular to the steam-engine.

I remain, sir, yours respectfully,
Britannia Works, J. SHAW,
Banbury, Nov. 13. (For B. Samuelson.)

Florence, Oct. 28, 1857.

SIR,—My manager at Banbury sent me your circular, inviting suggestions as to the trial of implements at the Royal Agricultural Society's annual shows; but as it has through some accident miscarried, I do not know precisely whether they are to have reference to the general policy of trials, or to the details of their management.

If you will therefore excuse me if any portion of the following observations should appear irrelevant, I would suggest, first, that the trials of all such implements as have acquired a fixed standard form be entirely discontinued, or, at all events, held at very distant intervals. I should include in this class ploughs, horse-hoes, harrows, mills, chaff and turnip-cutters, and several others.

Secondly, that implements of more recent adoption, and whose construction is in a state of transition from the crude contrivance to the finished machine, or which contains evident remediable imperfections, be tried say every third year. I should include in this class, as examples, scarifiers, haymakers, manure-drills, reapers.

As regards reapers, I should abolish the July trial, and substitute a special one, corresponding as to time with the adjourned trials at Pusey, Bristol, and Boxted.

I should try at convenient intervals (annually, if desirable) new implements; that is (A), *machinery* for effecting what has hitherto been done by hand labour, or by rude contrivances—or, (B), steam-worked implements in place of horse-machines.

I should abolish all money prizes, except one or two large awards for *new implements;* and these I should grant not necessarily for the accomplishment of any object, but for *steps* towards such accomplishments.

I should, with respect to other implements, frame a table ascertaining a series of points of excellence applicable to each implement, the *same* number in all cases representing perfection; and I should publish on the first public day of the Royal Agricultural Society's show the points and corresponding numbers for each implement tried. I should leave the public to judge as to the relative value of the points, which cannot be the same in all districts.

A committee of your Council could frame this table, as the implement-makers are sufficiently represented there.

If judges could not be found to undertake the trials on this footing—as some believe, but in which I by no means agree—that would be a reason for discontinuing the trials, and not for continuing them on the old footing.

I would not leave it in the power of the judges to issue commendations or any other marks of approbation.

We shall never have first-rate agricultural implements produced as cheaply as unlimited competition would otherwise produce them, until the present system, which stimulates us to "finical" alterations, is abolished and forgotten.

I am, sir, yours very obediently,
B. SAMUELSON,
James Hudson, Esq., (Of Banbury, Oxon.)
Secretary Royal Agricultural Society of England.

TO THE EDITOR OF THE MARK LANE EXPRESS.

SIR,—Agreeably to your request, I annex a copy of my reply to communication from Mr. Hudson, containing "Minute of Council," viz.—

Improvements in steam-engines, as well as other agricultural machines, &c., necessarily call for a revision of the conditions affecting their construction; for we have had in some classes articles much altered, others remodelled, and a few entirely metamorphosed, in order to further mature and qualify them for the ends for which they were devised.

I am, sir, faithfully yours,
Ripon, Nov. 15. THOMAS SCOTT.

CONDITIONS OF THE LAST TRIAL AT CARLISLE, 1855. (Copied from the Society's printed Prize Sheet.)	CONDITIONS OF TRIALS AS PROPOSED BY MESSRS. TUXFORD & SONS, OF BOSTON.
1. The portable steam engine must not be more than eight-horse nominal power, nor must the diameter of the cylinder exceed 9¾ inches.	1. No objection.
2. The exhibiters will be required to furnish to the Society, along with the specification, a longitudinal and transverse sectional plan of the boiler, showing the action of the fire upon the flues, and also to state in writing :—	2. The exhibitor will be required to furnish to the Society, along with the specification, a longitudinal and transverse sectional plan of the boiler, stating the amount of fire-surface, and the clear water space between the tubes, and showing the action of the fire upon the flues; also to state in writing :—
(*a*) The thickness and quality of the boiler plates.	(*a*) The thickness and quality of the boiler-plates.
(*b*) The diameter of the cylinder.	(*b*) The diameter of the cylinder.
(*c*) The length of stroke of the piston.	(*c*) The length of stroke of the piston.
(*d*) The number of revolutions of the crank-shaft (with its diameter, and whether made of cast or wrought iron).	(*d*) The number of revolutions of the crank-shaft (with its diameter, and whether made of cast or wrought iron).
(*e*) The diameter and weight of the fly-wheel.	(*e*) The diameter and weight of the fly-wheel.
(*f*) The diameter of the driving pulley (which should not be less than 6 inches wide, nor move at a rate of less than 1,600 feet per minute).	(*f*) The diameter of the driving pulley (which should not be less than 6 inches wide, nor move at a rate of less than 1,600 feet per minute).
(*g*) The number of horse power the engine is calculated to work at.	(*g*) The number of horse power the engine is calculated to work at.

(*h*) The probable time it will require to generate the steam (taking water at 60 degrees), and raise it up to the working pressure (not to exceed 45 lbs. on the square inch); (*i*) The quantity of fuel it will consume in getting up steam; and (*k*) The consumption of fuel for every hour it is in full work.	(*h i k*) Not needed, as the trials are intended to ascertain these facts.
3. The engine must be provided with a good water-gauge, and a short piece of pipe fitted with a cock having a thread to fit the ½-inch gas thread, for the purpose of fixing a pressure gauge.	3. No objection.
4. If the engine is worked on the expansive principle, no complicated means will be allowed for cutting off the steam. No force-pump must be fitted with more than two valves, and these must be easy of access. If a heater for water be used, it must be so constructed that the engine will work either with or without it.	4. The engine may have a simple cut-off valve, moved by an excentric for working the steam expansively. No force-pump must be fitted with more than two valves, and these must be easy of access. If a heater for water be used, it must be so constructed that the engine will work either with or without it.
5. The Society will be empowered to select any of the engines exhibited, for the purpose of driving other machinery under trial, and will pay the exhibiter £1 per day for the use of the engine and a competent attendant during the time the services of such engine may be required.	5. No objection.
6. In adjudicating on the merits of the portable engines, reference will be had to the price, simplicity of construction, the means provided for easy access to the working parts, economy of fuel, and to the portability of the engine, without losing sight of the strength required for safety, and which will be best secured by the free use of wrought iron instead of cast.	6. The boiler shall not exceed ft. of fire-surface per horse power, and shall have a clear water space of ¾ of an inch between the tubes. The Society will furnish a water-meter to ascertain the quantity of water in the boiler, and its evaporative power.
	7. In adjudicating on the merits of the portable engines, reference will be had to the price, simplicity of construction, the means provided for easy access to the working parts, economy of fuel, and to the portability of the engine, without losing sight of the strength required for safety, and which will be best secured by the free use of wrought iron instead of cast.

TUXFORD & SONS.

Boston and Skirbeck Iron Works, Lincolnshire,
Nov., 1857.

"TO THE CHAIRMAN OF THE IMPLEMENT COMMITTEE OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

"SIR,—Agreeably with the wish contained in a circular dated Sept. 18, and forwarded to us by your secretary, James Hudson, Esq., we respectfully beg to remark that after careful consideration of the last printed conditions of the society, issued for the guidance of exhibitors of steam engines previous to the trials at Carlisle, in 1855, we find them so nearly containing all that is requisite, that we have ventured to remodel them agreeably with our humble opinion, and to submit them for your consideration. We feel that there should be some limit to the amount of fire surface per horse power, but have not presumed to fix the limit, leaving it to your judgment to determine; at the same time permit us to remark that we have found by practice that 30 feet per horse power is best suited, both for economy and durability, and this is borne out in practice by the Cornish engineers, where economy is strictly attended to. We would further respectfully suggest that your consulting engineer should have instructions to define the mode of measurement of the fire surface for the guidance of all exhibitors. "Respectfully, we are, Sir,

"Your obedient servants,

"*Boston, Nov.* 2, 1857." "TUXFORD & SONS.

STEAM-PLOUGHING NEAR BOSTON.

Fowler's steam plough has been operating for two days (November 19th and 20th) on the farm of Messrs. Charles and John Swain, at East Ville, near Boston. Much interest was caused by the experiment, and many visitors attended the trials—some from simple curiosity, some to make their own observations, and many to hear the opinion of Mr. Swain upon the subject; This gentleman, be it known, is one of the most enterprising and successful agriculturists in that portion of England, and farming upwards of two thousand acres of the rich lands of Lincolnshire.

With the true hospitality of an Englishman, Mr. Swain threw open the doors of East Ville House, and made all welcome who there gave a call. An admission fee of 1s. was enforced at the gate of the trial-field, which went towards the expense of getting the engine, ploughs, and tackle there; but was put in force more for the purpose of keeping the field clear than for anything else.

The soil operated upon was of a moory nature, the farm at East Ville being all fen land. The field was 400 yards long. The furrows were 10 inches wide and 5 inches deep. Four ploughs worked together, thus turning 4 furrows at once. The time occupied in drawing the 4 ploughs the length of the field, or 400 yards, averaged 4¼ minutes. The loss of time at the ends of the field in reversing ploughs, &c., averaged 1½ minute each change, and a further loss was found, averaging about 1½ minute in every 36 minutes. Taking the results of 36 minutes, we have 25 minutes of ploughing and 11 minutes of delays, with an area of 2,666 yards' ploughing, being at the rate of 9 acres and a fifth of land ploughing-up per day of ten hours.

At 60 pounds pressure, which the engine was working at, its power might be estimated at nineteen-horse. The attendants were 2 men at engine and 1 carrying water, 2 men at the ploughs, and 2 boys with the rope-carriers.

In roughly calculating the cost of ploughing, certain unknown quantities must be assumed. The amount, therefore, for interest of outlay, wear, and repairs, is assumed at £120 per annum, and the time the engine and ploughs might be at work is supposed 180 days, or 30 weeks; so thus, to the weekly working expenses £4 would require to be added, or 13s. 4d. per day. Again, as considerable loss in time is experienced in removal from one field to another, and in setting the engine, rope, anchor, &c., it will not be unfair to assume that but 5 clear days of working should be calculated in the week.

The wages of the attendants will stand as follows: engine-man, per day, 4s.; man assisting at engine with rope, 2s. 6d.; ploughman, 3s.; man attending in field, 2s. 6d.; two boys with the rope carriers, at 1s. 6d. each; man and horse with water-cart, say 6s.; making, per day, 21s.: to which add coal, oil, &c., say 14s.; and 13s. 4d. for interest, wear, and repairs, and we have a total of £2 8s. 4d. per day, or £14 10s. per week.

Five clear days of ploughing per week, at nine acres and a fifth per day, gives a quantity of forty-six acres, at a cost of £14 10s., or 6s. 4d. per acre.

The ploughing would have been well done if the wheel in the furrow had been broader. The land being a moor soil, was very light, and in parts the furrow wheels sank three or four inches, thus taking the ploughs off the land. This difficulty had not been encountered before, and therefore no provision was made for it.

In "trenching" the work was well done; the depth was eighteen to nineteen inches; and where clay was met with, it was turned up to the top.

When the ploughing was finished, the engine windlass drew the engine across the ploughed field and up to the anchor, a distance of twenty chains, the wheels being rim-deep in the soil, and the movement of the engine as quick as eight horses would have drawn it.

The expressed opinion of Mr. Swain was, "that although the operations were not to be set down as perfect, the results were very successful."

BATH AND WEST OF ENGLAND AGRICULTURAL SOCIETY.

PUBLIC MEETING IN BARNSTAPLE.

On Friday last a public meeting was held in the Guildhall (convened by the Mayor, **Frederick Maunder**, Esq.), to take into consideration a proposal of the Council of the Bath and West of England Society, to hold their Annual Meeting in 1859 in Barnstaple, and to adopt measures to facilitate that object. The meeting was attended by many of the principal landed proprietors of the district, and a large number of the intelligent and influential farmers of North Devon; among whom may be noticed Sir Bourchier Palk Wrey, Bart., of Tawstock Court; Colonel Buck, of Hartland Abbey; Rev. Henry Wrey, of Corffe; William Holle, Esq., of Hannaford, member of the Royal Agricultural Society; Rev. John Harding, of Goodleigh; E. U. Vidal, Esq., of Cornborough, member of the council of the West of England Society; Robert Smith, Esq., of Emmett's Grange, Exmoor, member of the council of the Royal Society; William Vellacott Richards, Esq., of Georgeham; Capt. Bury Russell; John Knill Cotton, Esq., J.P.; William Avery, Esq., J.P.; Edward Mock, Esq., of Braunton; James Harris, Esq., of Bittadon; Richard Bremridge, Esq., of Cott; H. I. Gribble, Esq., J.P.; William Gribble, Esq., clerk of the peace; Lionel Bencraft, Esq., town clerk; C. E. Palmer, Esq.; Dr. Bignell, J.P.; George Peard, Esq.; Messrs. G. K. Cotton, George Burden, William Alford, John Dennis, John Snow, Charles Smith, W. Balsdon, George Lock, H. Trounce, John Ching, Richard Pethebridge, P. Andrew, and other noted agriculturists.

The **Mayor** briefly explained the objects of the meeting, and detailed the particulars as to the several communications that had taken place between the Town Council of Barnstaple and the Council of the West of England Society.

Sir **Bourchier Wrey** moved a resolution, "That it is desirable, for the interests of agriculture in this neighbourhood, that the meeting of the Bath and West of England Society should be held in Barnstaple in 1859." The hon. baronet, in eloquent terms, supported the resolution, and expressed his confidence that the Lord Lieutenant of the county (Earl Fortescue), who was a staunch friend to agriculture, and the large landowners of the division, would aid the object in every possible way.

Colonel **Buck** seconded the motion in an energetic speech; and it was carried *mem. con.*

E. U. **Vidal**, Esq., moved the appointment of a committee to co-operate with the Town Council of Barnstaple in collecting subscriptions and promoting the object. The Committee, including Lord Fortescue, Lord Portsmouth, Lord Clinton, Lord Poltimore, Viscount Ebrington, M.P., Sir James Hamlyn Williams, Sir B. P. Wrey, Sir Arthur Chichester; J. W. Buller, Esq., M.P.; William Williams, Esq.; Dr. Yeo; and nearly all the gentry, yeomanry, and merchants of the district, was formed, with power to add to their number.

Mr. **Robert Smith**, who is one of the most intelligent and energetic members of the Council of the Bath and West of England Society, supported the resolution in an eloquent speech, which met with a hearty response from his brother-agriculturists. Carried *nem. con.*

Mr. **Trounce**, steward to W. Williams, Esq., announced that that gentleman, who is the owner of extensive manors in the neighbourhood, would support the project in every way.

The **Mayor** engaged to act as secretary till the Committee should meet and appoint their own.

Sir B. **Wrey** moved thanks to the Mayor, and the meeting dispersed.

TWO CHANCES MORE FOR THE POTATOES.

TO THE EDITOR OF THE PLYMOUTH HERALD.

The following experiment, quoted from the *Agricultural Gazette*, and having been reported successful once or twice before, is worth the farmer's trying on the small scale. It is not much trouble, nor so unlikely as it may at first appear: peas being great absorbers of nitrogen, which they may extract from the potato juice, and thus check the putrefaction. Gypsum, 2 or 3 cwt. an acre, would probably help this action of the peas, and contribute, of itself, to preserve the potato:—

"I tried rather a curious experiment with a few potatoes this season. Some twelve months since I saw a letter from a farmer, stating the great success that had attended an experiment the writer had made in the previous season. It consisted in inserting a pea in each potato set, and planting the potato in the usual way. The result, he stated, was a large yield of peas, and a splendid crop of potatoes; but the most important result was the entire freedom of the potatoes so treated from any disease, while all those planted in the usual way, in the same field, were extensively deteriorated. I was led by this statement to try the experiment on a small scale, in my own garden, this season. I planted not quite half a peck, only fifty sets, in six ranks; cutting a piece out of each, and putting a pea firmly in.

"The peas grew up and flourished well; and last week I dug the potatoes. They were perfectly free from the slightest taint or speck of disease, and very fine and large; while in the same bed, close to them, was another lot, planted in the old style, nearly half of which were rotten. I leave your readers to draw their own conclusions."

The peas thus grown should probably be consumed the same year, not sown again; for although sound and wholesome for once, the infection might perhaps appear after two or three settings.

The following appears in the *Agricultural Gazette*, Oct 17, p. 717:—"I have this year potatoes grown alternately with turnips; namely, two rows of turnips and one of potatoes, over a part of the field; the two rows of turnips sown by drill, the intervening rows of potatoes put in by a man making a hole with a spade point, and a boy to drop the set into it, which is quickly done.

"This I did with a view of trying how far a mixture of vegetables might counteract the disease of the potato. Both turnips and potatoes are an excellent crop. One row of potatoes has been used at table, without finding anything of the disease which prevails to a considerable extent all over the neighbourhood; whether they may yet be affected by it remains to be seen."

In this experiment the dung seems to have been ploughed down fresh, just after harvest, so as to have been thoroughly rotted in the ground, before the potatoes and turnips were put in.

I. **Prideaux.**

CALENDAR OF AGRICULTURE.

During fresh weather continue the ploughing of stubbles for the next year's wheat, and green crop fallows and leys for Lent crops. Repair old fences, and make new ones. Continue the cutting of drains when the weather permits; mend roads, and cast up earths for composts. Collect for manure, in every shape or form, all earthy and vegetable substances that can be got.

Flood meadows, and lay dry occasionally.

Cut underwoods, and fill up vacancies by planting and layering; plant all kinds of forest trees, especially ash and oak. Keep plantation fences in good repair, to prevent trespassing—a very sure sign of slovenly management. Raise turnips, and store the roots in dry fresh weather; give the tops to young cattle in the yards, and to the store sheep in the fields.

Early lambs will be dropped during this month in some places. Feed the ewes very liberally, and provide good shelter.

During frosty weather thrash very frequently, and litter the yards very often. Collect earths to the compost heaps, and carry lime for mixing with the earths: cart stones to the places of draining; carry fuel, timber, and faggots.

This month arranges the winter operations for a systematic management in every department. The live stock require the most vigilant and unremitting attention in being amply and regularly fed, and in having a dry and comfortable bed in yards and sheds. Keep the steamer in constant work, and give cooked food daily to the horses, cows, pigs, and poultry. Give the meat fresh, and allow no sourness to take place. Give to the cattle the turnips from the store pits, but in fresh weather bring the roots daily from the fields. The drains and culverts must be all in going order, to conduct the urinary liquid to the tank. The cattle in the yards should eat under cover, especially in high, cold latitudes. This purpose may be most completely effected by having the whole area of a farmery roofed over like the terminus of a railway: this arrangement has been mentioned, but not more advanced.

The crops of grain, the animals, and all moveable articles being the property of the farmer, should be insured at his cost, and the buildings at the expense of the proprietor. The lease must contain a clause to this effect, and the party who neglects the insurance is most culpably negligent, and commits an injustice not only to himself, but against the public at large.

DUTY ON HOPS.

An account of the duty on hops of the growth of the year 1857, distinguishing the districts, and the old from the new duty.

DISTRICTS.	DUTY. £	s.	d.	
Barnstaple	55	8	8¾	
Canterbury	64,749	15	8¾	
Cornwall	2	1	9¾	
Coventry	0	13	9¾	
Essex	1,628	14	10½	
Gloucester	34	3	8¼	
Grantham	8	4	1¾	
Hants	22,859	17	11	
Hereford	41,707	3	5	
Isle of Wight	16,438	8	11¼	
Lincoln	212	16	8¼	
Lynn	6	15	11½	
Northampton	41	3	8½	
Nottingham	80	3	1¾	
Reading	117	18	7	
Rochester	171,924	4	1¼	
Sheffield	1,328	9	5½	
Stourbridge	11,327	9	2¾	
Suffolk	1,578	14	1¾	
Surrey	1,570	19	7¾	
Sussex	68,492	9	8½	
Taunton	56	12	9	
Wales (Middle)	195	7	2	
Ware	83	10	6½	
Worcester	12,381	16	3¼	
	£416,883	4	2	
Old duty at 1d. 12-20 per lb	228,294	1	1½	4-20
New duty at 0¾d. 8-20	168,739	1	8¼	16-20
Additional duty of 5 per cent. per act 3 Vict., c. 17	19,850	1	4	
	£416,883	4	2	

CHAS. S. HAWTHORNE,
Assistant Accountant and Comptroller-general.
Inland Revenue Office, 3rd *Nov.*, 1857.

MONTHLY RETURN.

AN ACCOUNT SHEWING THE QUANTITIES OF CORN GRAIN, MEAL, AND FLOUR, IMPORTED INTO THE UNITED KINGDOM, AND ADMITTED TO HOME CONSUMPTION, IN THE MONTH OF OCTOBER, 1857.

Species of Corn, Grain, Meal, and Flour.	Imported from foreign Countries.			Imported from British Possessions out of Europe			Total.		
	qrs.	bush.		qrs.	bush.		qrs.	bush.	
Wheat	380061	1		9916	2		389977	3	
Barley	121587	0		0	1		121587	1	
Oats	187187	4		..			187187	4	
Rye	13684	3		..			13684	3	
Peas	4932	5		26	4		4959	1	
Beans	14556	7		0	1		14557	0	
Maize or Indian Corn	156701	3		287	4		156988	7	
Buck Wheat	3	0		..			3	0	
Beer or Bigg	1110	0		..			1110	0	
Total of Corn and Grain	879823	7		10230	4		890054	3	
	cwts.	qr.	lb.	cwts.	qr.	lb.	cwts.	qr.	lb.
Wheat Meal and Flour	104357	1	20	18135	1	25	122492	3	17
Barley Meal	2	2	10	..			2	2	10
Oat Meal	4	0	0	13	0	15	17	0	15
Rye Meal	35	3	7	..			35	3	7
Pea Meal	..			..			..		
Indian Meal	3	0	0	..			3	0	0
Buck Wheat Meal	2	2	0	..			2	2	0
Total of Meal and Flour	104405	1	9	18148	2	12	122553	3	21

AGRICULTURAL REPORTS.

GENERAL AGRICULTURAL REPORT FOR NOVEMBER.

From a variety of causes the greatest heaviness has prevailed in the demand for wheat, both English and foreign, during the whole of the month, and a continuous fall has taken place in the quotations. When we consider the influences in operation, we are in no way surprised at the decline which has been reported in prices. In the first place, the country has been passing through a great money crisis, the result partly of over-trading, and partly in consequence of the disturbed state of feeling in commercial matters throughout the United States; consequently, consumption has, in some measure, fallen off. In the next, sales of foreign produce have been forced, owing to the difficulties experienced by the importers in obtaining advances upon corn bills. And, in the last, the Emperor of the French has opened his ports for the outflow of native produce. The dealers have naturally operated with more than usual caution, under the impression that prices have not seen their lowest point. No doubt we shall receive some rather large supplies of flour from France during the next three months, because at present there is a good margin of profit upon shipments; but the question is, has France much really to spare for us? and will not large shipments to England have the effect of enhancing prices on the other side, so as eventually to render the export trade unprofitable? However, there is one thing quite clear, viz., that only moderate arrivals from France—and those being generally of a superior quality, consequently saleable here—will keep prices in check, and the partial loss of the potato crop may thus be made good. The disturbed state of mercantile affairs in America has checked the outflow of food to the United Kingdom; but it is generally admitted that an immense amount of produce still remains in the interior of the country, and which, eventually, will come forward. When we bear in mind that our own crop of wheat has turned out most abundant, and for the most part in fair condition, it must be admitted that there is very little prospect of any advance in the quotations; still, we are not prepared to agree with some persons that wheat will be selling at an average of 40s. per qr. That amount would entail serious losses upon the producers, who, if they desire steady markets in a comparative sense, will decline to thrash out more produce than the demand can take off.

The barley trade has likewise ruled heavy in the extreme, and a considerable fall has taken place in prices. This trade has been influenced by the unusually small quantities of malt which have found buyers for some time past, the large influx of inferior qualities from the Upper and Lower Baltic, and the falling off in the number of orders received from the Continent for raw spirit, arising from the increased produce of the wine crop in France. In other respects, the corn trade has ruled heavy; but we may observe that the oat trade has lately shown signs of steadiness. The imports of oats from the North of Europe will now shortly fall off to some extent, and the bulk of the supplies of that grain has already come to hand.

Commercial distress, and the continued fall in the value of hides, skins, and rough fat, have had their usual influence upon the cattle trade. Prices almost generally have given way, and butchers have purchased with more than usual caution. From most quarters we learn that the health of the stock, both beasts and sheep, continues good, and that no serious losses have been sustained by the graziers.

The turnip crop is turning out not quite so heavy as was at one time anticipated; but the supply of swedes is a very large one and of good quality. There is a large quantity of both old and new hay on hand, so that the supply of food for winter use and consumption is large. Straw is likewise most abundant, the result of a large wheat crop. Meadow hay has sold at low rates, viz., from £2 10s. to £4; clover do., £3 10s. to £5; and straw, £1 6s. to £1 10s. per load.

The supplies of home-grown potatoes on sale in the London and local markets have been very moderate and in but middling condition; but over 6,000 tons have been imported into London alone from the Continent. The condition of the latter is not to say first-rate. The trade has ruled heavy, at prices varying from £2 15s. to £7 per ton.

The public sales of colonial wool held during the month have been but moderately attended, both by home and foreign buyers. Only a portion of the supply, offered has been disposed of, and prices have given way, compared with the previous series, from 2d. to 3d. per lb. English wools have declined to the same extent, and the demand for them is so trifling that the present rates are nominal.

As the produce of hops this year is ascertained to be a full average one, the hop trade has been in a very inactive state, and the highest price paid for the best East Kents, in pockets, is £6 per cwt. A large quantity of old and yearling hops is still on hand.

In Ireland and Scotland, the corn trade has ruled heavy at drooping prices; the demand for fat stock, however, has continued somewhat healthy.

REVIEW OF THE CATTLE TRADE DURING THE PAST MONTH.

Although the supplies of both beasts and sheep on offer in the leading cattle markets held during the past month have not been to say extensive, the demand generally has fallen off, and prices have had a downward tendency. The panic in the commercial world and the high value of money in the discount market, added to the prospect of a decline in the consumption of meat, arising from the stoppage of machinery in our manufacturing districts, have, of course, had their accustomed influence upon the quotations; but the other leading cause of the decline has been the continued fall in the value of raw hides, skins, and rough fat. With all these adverse influences, however, the cattle trade must be considered in a healthy state, and it must be admitted that prices are still very high. At present, we see no reason to anticipate any serious fall in them, because we are of opinion that the commercial crisis will shortly be at an end, and that the imports of foreign stock will not be large during the remainder of the year; indeed, the prospect is that they will now decline, as many of the continental ports will shortly be closed for the winter.

The arrivals of stock from Lincolnshire have exhibited a great improvement, both as to weight and condition, compared with some previous months, and they have, consequently, afforded an increased supply of raw fat. From other parts of England, however, the few arrivals have been in very middling condition. The improved weight of the beasts may be attributed to the unusually large supplies of grass in the pastures for the time of year, and the comparative abundance of the root and hay crops.

Steady supplies of stock have reached the metropolitan market from Ireland, *via* Liverpool, in good saleable condition. Had it not been for these arrivals, beef would have realized considerably enhanced rates, and great activity would have been apparent in the demand. For the general consumer, these arrivals are most opportune, and we doubt much the propriety of running up prices suddenly, as high quotations frequently lead to a decrease in the consumption, and to great embarrassments on the part of the butchers, especially where long credits are given. Besides, very high quotations for fat stock lead to extravagant rates being frequently given for store animals; and grazing thus, in many instances, becomes an unprofitable business.

The approaching Christmas Cattle Show is looked forward to with more than usual interest, owing to the formation of additional classes. From all that we can learn, it promises to be by far the most important exhibition on record.

The imports of linseed and rapeseed have been very moderate; yet the demand for those articles has ruled heavy, at drooping prices. Seeds have likewise given way in value, with a heavy inquiry.

The following return shows the extent of the direct imports of foreign stock into London:—

Beasts	4,409 head.
Sheep	12,839 „
Lambs	180 „
Calves	2,657 „
Pigs	136 „

IMPORTS AT CORRESPONDING PERIODS.

Nov.	Beasts.	Sheep.	Calves.	Pigs.
1856	6,102	16,380	1,152	309
1855	7,367	17,094	1,127	454
1854	7,120	16,604	1,108	369
1853	7,390	22,565	1,629	919
1852	3,102	18,152	1,215	427

The supplies of stock derived from all quarters, exhibited in the metropolitan market, have been as under:—

Beasts	25,383 head.
Cows	505 „
Sheep	103,120 „
Calves	3,002 „
Pigs	3,067 „

COMPARISON OF SUPPLIES.

Nov.	Beasts.	Cows.	Sheep.	Calves.	Pigs.
1856	24,711	457	97,460	1,585	3,535
1855	24,154	505	105,750	2,096	3,415
1854	23,442	515	121,031	1,848	2,726
1853	25,760	562	127,150	2,615	2,790
1852	23,583	435	115,770	1,718	3,210

The arrivals of beasts from Lincolnshire, Leicestershire, and Northamptonshire have amounted to about 13,000 shorthorns; from other parts of England, 1,800 of various breeds; from Scotland, 257 Scots; and from Ireland, 1,850 oxen. Rather over 1,000 Irish sheep have been on sale.

Beef has sold at from 3s. to 4s. 10d.; mutton, 3s. to 5s. 4d.; veal, 3s. 10d. to 5s. 4d.; and pork, 4s. to 5s. 2d. per 8lbs., to sink the offal.

COMPARISON OF PRICES.

	Nov., 1856.					Nov., 1855.					Nov, 1854.				
	s.	d.		s.	d.	s.	d.		s.	d.	s.	d.		s.	d.
Beef, from	2	8	to	4	10	3	4	to	5	2	3	4	to	5	2
Mutton	3	2	—	5	2	3	4	—	5	2	3	4	—	5	0
Veal	3	8	—	5	4	3	6	—	5	4	4	2	—	5	6
Pork	3	6	—	5	4	3	6	—	5	0	3	4	—	5	0

The supplies of meat shown in Newgate and Leadenhall have been seasonably extensive, and a full average business has been transacted as follows:—Beef from 2s. 10d. to 4s. 4d., mutton 3s. to 4s. 8d., veal 3s. 8d. to 4s. 6d., pork 3s. 6d. to 5s. 4d. per 8lbs. by the carcase.

AGRICULTURAL INTELLIGENCE, FAIRS, &c.

ANDOVER FAIR.—The number of sheep penned was far below the general average. The attendance of dealers was good. Business was exceedingly dull, owing to the high prices asked by the sellers, which caused only a partial clearance to be effected, and a large number were driven away unsold. The prices obtained were considered about 2s. a head higher than at the late Appleshaw Fair. Ewes 35s. to 45s., wethers 35s. to 50s., lambs 30s. to 44s.

AUCHERGAVEN MARTINMAS MARKET.—There was fully an average attendance. Prices of all kinds of cattle fell from twenty to thirty per cent. There were about 200 cattle and 100 sheep on the ground. There was a good demand for milk cows: prices from 8*l.* to 12*l.* One-year-old stirks sold at from 4*l.* 10s. to 6*l.* 10s. For two-year-olds, and all kinds for stall-feeding, there was no demand; and very few of them were sold. The demand for fat cattle was fair; and most of them exchanged hands. Sheep were also in good demand; but prices were much down.

BANBURY FAIR.—Business seems generally dull. The cattle market is very full, more beasts being here, perhaps, than we have seen for a considerable period. Prices are lower; and sales are not easily made. The sheep fair is not quite so full as we have seen; but the quality is generally really excellent. Wether mutton maintains its former prices; but live mutton has rather sunk, and sold in some cases as low as 4s. per stone. The pig market was well supplied with all kinds and qualities; but before sales could be made, a reduction in former prices had to be made. We quote currently, and of fat hogs, from 9s. 6d. to 10s. per score.

BELLINGHAM FAIR.—An average show of cattle, but business at a dead stand. What sales took place were at a considerable reduction below former markets. Promising young beasts, and some nearly ready for the butchers, failed to meet purchasers, and fully half the stock left the ground unsold.

BOGBAIN MONTHLY MARKET.—The November market, the last day of the season, is always an unimportant one; and it was so on this occasion. Few good cattle were shown. Single beasts or small lots, of Highland breed chiefly, made up the stock shown. There were but a few sheep. Few transactions took place: the market, like that at the Muir of Ord, was stiff for sheep and cattle.

BRECON FAIR.—Stock of nearly all descriptions was quite at a discount. Horses in particular were a perfect drug in the market. Although there was a tolerably large collection of useful animals, and the prices asked were not so large as have been lately obtained, yet few sales were effected. Cattle in good condition, especially those fit for the butcher, met with a ready sale; but the number of good ones was small, and the prices realized were hardly up to recent rates.

CALLINGTON FAIR was fairly supplied with cattle and sheep. The demand, however, was languid; and to effect sales, a little abatement on late prices had to be submitted to. Fat bullocks 3*l.* to 3*l.* 3s. per cwt., fat sheep about 6d. per lb. Cows and calves maintained their value.

CAMBRIDGE FAIR.—Business was brisk; and a great many animals sold. Some fine yearling horses fetched at the rate of 50*l.* each, while others, of a more ordinary description, realized good prices; and, altogether, a fair average amount of business was transacted.

CARLISLE FAIR was one of the worst that the dealers have had for a long time past, owing probably to the Down fair in Stirlingshire, held about three weeks ago. At that fair Scotch-bred cattle were all bought up at late high prices, and in the interim of three weeks the markets had gone down on every side. Customary purchasers of stock at Carlisle did no business, or next to none, standing aloof.

DONCASTER FAIR.—There was a large show of lean stock: the general quality was much inferior to what has been seen on former occasions. Trade was very limited; and prices of all descriptions were lower, many being left unsold. There were a few fat beasts; and anything really prime brought fully as much money as of late, the top price being 8s. per stone. A limited show of sheep, with little doing. The horse fair was chiefly confined to second-class and inferior animals.

DUNSE FAIR.—The show of cattle was principally composed of shorthorns; there were only a few lots of three-year-olds, but the principal part of the stock consisted of two-year-olds and stirks. The few lots of three-year-olds were very readily picked up at a shade less than Hallow Fair prices. The two-year-olds barely maintained what was got at that market; but the stirks were in demand, and realized fully 5 per cent. above Hallow Fair. The two-year-olds ran from 11*l.* to 13*l.*; three-year-olds from 12*l.* to 13*l.*; and stirks 7*l.* 15s. to 8*l.* 5s. The larger descriptions of stock were more easily bought than at that market. The stock was fully one-third above last year's number. Mr. Crichton bought a lot of three-year-old shorthorns, at 12*l.*; another lot of two and three-year-olds at 12*l.*; and two large lots of stirks at 8*l.* 5s. The show of Irish was not so large as has been seen at this market, and what was exhibited were principally composed of two-year-olds and stirks. The trade was stiff throughout, and anything that was done was accomplished about mid-day, and admitted to be, in some instances, easier than Hallow Fair; and towards the close of the market about 5 per cent. below. There were also a few of this kind turned off unsold. Milk cows was a very meagre show. The best class of cattle, in one or two instances, brought about 17*l.* 10s.; secondary kinds from 12*l.* to 14*l.*; and something like a third class brought from 8*l.* to 10*l.* The demand for this kind was not great, and few exchanged hands. The sheep market was principally composed of lambs, half-breds, three parts, and also a sprinkling of bred sheep—these being the shots of the various stocks in the south of Scotland. Feeding lambs were principally in demand, and this kind brought fully higher prices than last year, being in somewhat better condition. The breeding lambs were not in the same demand, and suffered a reduction of about 5 per cent. below recent markets. There were few lots of fat wethers, for which 50s. were asked; the holders reduced the price to 48s., but 45s. was only offered, and, with the exception of one lot, all the rest were turned off unsold. Half-bred lambs, from 15s. 6d. and up to 20s.; three parts bred, 18s. to 22s.; and bred lambs, from 20s. to 26s. The show of colts and fillies from Cumberland was very large to-day, for which there was a good demand, and prices ran from 30*l.* to 35*l.*, and, in some instances, as high as 40*l.*—the ages being from two to three-year-olds. The show of draught horses was not very extensive, and, with few exceptions, were of an inferior quality. The highest-priced animal brought 50*l.* Mr. Alexander Grey, Edinburgh, Mr. Adam Wilson, Edinburgh, and Mr. Robert Clark, Fisherrow, were the principal dealers from this quarter; also Mr. Archibald Pittelly, from Kelso, who did a good deal of business in draught horses, at prices, for useful animals, ranging from 23*l.* to 30*l.*, and for the better class from 35*l.* to 40*l.* There were a few saddle and harness horses, but of a very inferior description, which met little encouragement, and what business was done would be fully 10 per cent. below recent markets. Take the trade upon the whole, it was a bad one.

GLOUCESTER MONTHLY MARKET. — There was a large supply of beasts, but of a very inferior quality. Good beef was scarce, and sold at high prices. There was more than an average number of sheep penned, but the quality was very indifferent. Prices varied: Beef, 6½d. to 7d.; and mutton, 7d. to 7½d. per lb. In pigs a dull sale at from 9s. 6d. to 10s. per score.

HAWICK FAIR.—The attendance was comparatively small. The number of cattle on the ground was small, and the market was dull. Shorthorn stirks brought 7*l.* to 8*l.* 15s.; queys, 8*l.*

HAYWARD'S HEATH FAIR.—The supply of pigs was larger than we ever remember seeing before, but sales were very dull, and a large number remained unsold. Good shoots from 12 to 14 weeks old fetched from 15s. to 18s. Pigs from the sow were sold at from 10s. to 12s. each. Older shoots were not worth so much by 10s. per head as at this fair last year, and a great many did not get a bidding offered. A few horses and horned cattle of inferior descriptions were shown, but no business worth naming was done.

ISLEY FAIR was not largely supplied, and trade was rather dull. Prices about 1s. per head lower than last fair. Nearly all were, however, sold.

KINGSTON (SURRY) FAIR.—There were about 600 head of cattle of various breeds. Herefords fetched from £12 to £16 each; Devons, from £10 to £18 each; milch cows, from £14 to £20 each. Sheep did not realize so much by 4s. a-head as they have fetched at other fairs.

LOUGHBOROUGH FAIR.—The supply of stock was good, both in the store and fat line, and a good deal of business was done at satisfactory prices, although a shade lower than what was obtained a short time back. There was a marked improvement both in quantity and quality of the horses, but the holders were obliged to submit to a considerable reduction, at least from 10 to 15 per cent. Cart foals were almost unsaleable.

MUIR OF ORD MARKET was one of the stiffest ever known. Little business was done, and prices were down fully 10 per cent. The best cattle, of which there were very few, were almost unsaleable; and crosses, which were also a poor show, were sold at very low prices, compared with those freely given in October. The November market is usually one merely for the accommodation of the district — few South country dealers attempting it — and it is consequently of secondary importance. The following are a few of the transactions: Mr. Chisholm, Achnacloich, sold Highland heifers at £9 10s., and Highland quey stirks at £4 10s. Mr. Rose, Connage, bought cross stots, six-quarters old, at £6 15s. Mr. Rose, Kirkton, bought Highland stots, two years off, at £9. Mr. Macdonnell, Aonach, bought six-quarter-old cross stirks at £6 12s. 6d., with luckpenny. Mr. Douglas Drummond bought six-quarter-old heifers at £6 10s. Mr. Fraser, Shewglie, two-year-old cross queys at £5 10s., &c. Among the transactions in sheep we can only record the following: A lot of superior Cheviot wedders, belonging to Mr. White of Monar, were sold at 34s. each, and a fine lot of half-bred hogs from Tomich were sold by Mr. Maclennan at 30s.

PETERBOROUGH FAT STOCK MARKET, (Wednesday last.)—A great number of Sheep were penned, for which there was rather more trade at the reduced prices of last week. Beasts about 70, which sold slowly at previous rates; the best quality only making 8s. per stone. Pigs were lower.

RIPLEY FAIR was exceedingly well attended by the large drovers, and upwards of a thousand head of horned cattle were offered for sale. Purchasers were in attendance in considerable numbers, and the frequent repetition of the Welshman's peculiar cry, on a sale being effected, showed a good trade was going on. There was also a fair show of horses, several pens of sheep, and a large show of pigs, which rapidly changed owners.

RUGBY HORSE FAIR.—The town has this week been literally filled with horses, from the high mettled charger down to the poor old horse. The high prices obtained for horses during the past few years induced many farmers to turn their attention to the breeding of that useful animal. The consequence is, that the supply has increased over the demand, which, together with the tightness in the money market, has caused a panic in the horse-dealing business. Horses which would have found ready purchasers last year at £50, were a drug even at £40. Cart colts were proportionably low in price. Taking the fair as a whole, it has been the flattest known in Rugby for many years.

TEWKESBURY FAIR.—There was a good supply of all kinds of cattle, and the attendance of buyers was also numerons. In most cases, however, business was done at a reduction in prices, and trade was dull. Beef fetched 6d. to 6½d. per lb., mutton 7d. There were a great many horses, and a few pigs, but prices were lower than last month.

TOWN MALLING FAIR.—The attendance was larger than usual, and there was an excellent supply of good beasts, &c.; but, from the high prices demanded, comparatively little business was done, and trade generally ruled flat.

TRURO FAIR.—There was a large supply of bullocks, but principally dealers' cattle, very few farmers' stock being offered for sale. Fat cattle were scarce, and sold well at late rates; store cattle were easier to buy, except working oxen, which sold very high; still they were not so much in demand as they have been. Fat sheep were scarce, and sold freely at 7d. per lb.; store sheep were not so much inquired for, and did not sell for so much money as before.

YEOVIL FAIR was largely attended. The quality of stock was about the usual rate. Beef was sold at from 9s. to 10s. 6d. per score; Devon steers £10 to £13 each; barren heifers, fresh in condition, £11 to £12 each; two-year-old heifers in-calf £9 to £11 each; yearling ditto £5 10s. to £6 10s. each. The sheep fair was not so largely supplied as in former years, and the prices had a downward tendency. There was a good supply of pigs, but the trade ruled very heavy and few sales were made, and those at a decline in price. The horse fair was indifferently supplied with good horses, in consequence of the greatest part of the dealers leaving the fair early for Rugby fair on the following day.

YORK HORSE FAIR.—The number of horses was not large, yet about equal to the demand. The first class was chiefly for agricultural purposes, mostly of very good quality, and met a fair sale, at prices much in favour of the buyers. The second class was chiefly of the saddle and harness kind, of middle quality, and sold slowly, at downward rates. The rest were inferior animals, and were neglected.

WELSH FAIRS have been held at Llandilo on the 12th, at Llansawel on the 13th, and at Carmarthen on the 14th of this month. There was an immense number of store cattle for sale at each of these places, and a fair attendance of dealers, but they purchased very sparingly, and at considerably lower prices than have ruled of late. Cows with calves continued very scarce, and sold at very high rates. Fat beasts were in fair supply and demand at late prices. There was but a meagre number of horses and colts on offer, with a very slow demand at lower rates. There was a large number of fat and store pigs for sale at each place on the following days; the demand was but languid, at a considerable reduction in their value. The supply of horned cattle and horses was good, and those sold reached high prices. The supply of pigs was very good, most of which were sold at an early hour at fair rates.

IRISH FAIRS.—Letterkenny.—The greatest demand was for newly-calved cows or springers; and these brought from £8 to £13. There was a number of fat pigs, but the demand for these was very limited. A few were bought at about 40s. per cwt., suckers from 10s. to 12s. 6d. each. Ballinakil.—Fat cows and bullocks averaged from £11 to £17, new milch cows (very scarce) £10 to £14, strippers £8 to £12, springers £10 to £15 (a single animal went as high as £19), two-year-olds £8 to £10 10s., yearlings £6 to £8, weanlings £3 10s. to £4 10s. Fat sheep hardly to be found. Lambs (very inferior) 26s. to 30s. No fat pigs; stores 30s. to 50s.; bonhams most numerous, and bringing about £1 per couple. Dundalk.—Heifers sold at £14 to £15 per head. Springers went at from £10 to £18, according to size and quality. Young bullocks of from two years to two years and a half old went at from £8 to £10, yearlings and one-and-a-half years old at from £3 10s. to £4 15s. and £6 each, according to quality. Porkers went at from 38s. to 43s. per cwt. Stores appeared in considerable numbers, and were in fair demand, at from 25s. to 30s. each, which was considered low. There was a large supply of slips, rating from 20s. to 25s. per head. Young pigs were in great abundance, and went proportionately low, at from 3s. 6d. to 5s. 6d. and 8s. 6d.; few went beyond 10s. each. There were not many horses brought forward for sale. Those exhibited were of an inferior class. Long-tails were from £10 to £14; and farmers' working cattle brought from £7 7s. to £12 12s. Trim.—Prime heifers went at from 9*l*. 15s. to 12*l*. 15s.; some very superior lots brought from 13*l*. 10s. to 14*l*., but these were rare exceptions. Two-year-old heifers went at from 8*l*. to 12*l*. Two-and-a-half-year-old bullocks went at from 9*l*. to 12*l*., and some good lots brought 13*l*. Springers went from 10*l*. to 12*l*. 10s., and milch cows brought from 12*l*. to 17*l*. 10s. Some prime lots of sheep were sold at the rate of from 5d. to 5¼d. per lb. Ewes went at from 36s. to 45s. each. Lambs brought from 22s. 6d. to 27s. 6d. and 30s. Bacon pigs rated at from 47s. per cwt., stores from 33s. to 40s., and suckers from 8s. to 10s. 6d. Horses for farming purposes from 8*l*. upwards. Carlanstown.—Beeves, store bullocks, springers, every description, in fact every class, were exceedingly well represented. Beef ranged from 45s. as the minimum, to 60s. as the maximum figure per cwt. A tolerably fair show of sheep appeared on the green. Ewe mutton rated at 6d. per lb., wedder mutton from 6½d. to 6¾d. per lb. Rathkeale.—The first winter fair of the town was held on Thursday, and, although the weather proved unfavourable, it was one of the best that took place in the county Limerick for some time. The beasts were prime and good; heifer beef was in great request, and sold briskly at from 50s. to 54s. per cwt. Slaughter beef, a quantity of which cleared off, rated at from 36s. to 44s. per cwt. Milch cows were not plentiful, and sold at from 9*l*. to 14*l*. per head. There was very little demand for young stock.

CHIPPENHAM.—Our market was well supplied with cheese of all descriptions. Nearly 200 tons were pitched, not more than one-half of which changed hands, in consequence of factors refusing to purchase unless at a reduction of from 4s. to 6s. on last market prices. The following prices were barely maintained: Broad doubles, 52s. to 58s.; prime Cheddar, 56s. to 70s.; thin, 42s. to 50s.; loaves, 52s. to 60s.; skim, 22s. per cwt.

GLASGOW.—The market still remains dull, and few if any sales effected. There were only two carts, and two tons passed through the weigh-house. We continue former quotations—48s. to 50s. for new, 65s. to 67s. for old; skim, 24s. to 26s.

GLOUCESTER.—On Monday, about 100 tons of Cheese (a moderate supply for the season) were pitched. Only about half of this found buyers, and that at lower prices by about 6s. per cwt. than on the previous market day. Best thick and doubles made from 60s. to 63s., singles 52s. to 56s., seconds 40s. to 48s., skim 20s. to 28s. per cwt.

ENGLISH BUTTER MARKET.

LONDON, Monday, Nov. 23.—Our trade is generally dull, but Dorset butter, from its scarcity, is supported in price for best quality.

Dorset fine	per cwt.	126s. to 128s.
Ditto, middling..............		100s. to 104s.
Devon		116s. to 118s.
Fresh............	per doz. lbs.	12s. to 15s.

BELFAST, (Friday last.)—Butter: Shipping price, 100s. to 113s. per cwt.; firkins and crocks, 10d. to 11d. per lb.; Bacon, 56s. to 60s.; Hams, prime 84s. to 90s., second quality 70s. to 78s. per cwt.; prime mess Pork, 95s. per brl.; Pork, 40s. to 50s.; Beef, 120s. to 130s. per tierce; Irish Lard, in bladders, 76s. to 80s.; kegs or firkins, 68s. to 70s. per cwt.

LONDONDERRY, (Thursday last.)—The supply of butts and firkins this week small; for the latter the demand continues dull, and we note a further decline in prices—the quality of the butts at market being very inferior, an advance of 0¼d. to 0½d. per lb. was obtained for any fine: firkins, first 1s. 0½d., second 10½d., third 9¾d., fourth 8¾d., fifth 8d.; butts, fine 1s. 0½d., good 11d. to 11¾d., middling 10d. to 10½d. per lb.

POTATO MARKETS.

BOROUGH AND SPITALFIELDS.

LONDON, Monday, Nov. 23.—Since our last report only moderate supplies of home-grown Potatoes have come to hand, coastwise and by land-carriage. From abroad the imports have been liberal, viz., 180 tons from Rotterdam, 20 tons from Harlingen, 230 tons from Hambro', 312 tons from Antwerp, 30 tons from Ghent, 20 tons from Ostend, 140 tons from Nieuport, 145 tons from Bruges, 10 tons from Bremen, and 20 tons from other ports. The trade for all kinds is inactive, as follows:—

York Regents	140s. to 160s.	per ton.
Kent & Essex do.............	60s. to 160s.	„
Scotch	100s. to 130s.	„
Do. Cups	75s. to 85s.	„
Lincolns	80s. to 140s.	„
Foreign.....................	70s. to 85s.	„

SOUTHWARK WATERSIDE, Monday, Nov. 28.—During the past week the arrivals both coastwise and from abroad have been much more plentiful than the demand; the trade is in a very depressed state, and the greater part of last week's arrivals are still on hand. The following are this day's quotations:

Lincolnshire Regents	90s. to 120s.	per ton.
Perth, Forfar, and Fifeshire do.	90s. to 110s.	„
Ditto, Reds................	55s. to 60s.	„
Irish Whites	70s. to 90s.	„
Belgian Whites	60s. to 70s.	„
Dutch do..................	60s. to 70s.	„

COUNTRY POTATO MARKETS.—York, Nov. 14: Potatoes sell at 10d. to 1s. per peck, and 2s. 9d. to 3s. 6d. per bushel.—Malton, Nov. 14: Potatoes 1s. to 1s. 3d. per peck. —Richmond, Nov. 14: Potatoes 4s. per bush.—Thirsk, Nov. 16: Potatoes 9d. per stone.—Leeds, Nov. 17: A fair show of Potatoes, which sold readily at 12d. to 13d. per 21lbs. wholesale, and 13d. to 14d. retail.—Sheffield, Nov. 17: Potatoes sell at 12s. to 15s. per load of 18 stones.—Manchester, Nov. 17.—Potatoes sell at from 11s. to 15s. per 252 lbs.

PERTH POTATO TRADE.—There was very little doing in Potatoes on Friday, the principal dealers not purchasing at any price.—*Perth Courier.*

REVIEW OF THE CORN TRADE

DURING THE PAST MONTH.

The weather during the past month has presented unusual opportunities for tillage and the sowing of wheat—rain, though occasionally heavy, falling but seldom; and the early-sown plants have generally presented an even, healthy, and forward appearance. The stringency of monetary affairs kept markets down at the commencement, without, however, the apprehension of much further decline; and though there were rumours at first that the French Government was likely to allow the export of corn notwithstanding the recent decree to the contrary, they passed away, and future rates seemed chiefly to depend on the turn of monetary affairs. But as a specimen of the evils of arbitrary rule, another change came over the Imperial mind before the middle of the month; and on the 11th the news of the permission reached London by the submarine telegraph, immediately throwing business into a state of complete suspense, and bringing down the price of wheat 3s. to 4s. per qr., from which reduction it has not yet rallied, though the market shows more confidence in present prices. Unlooked-for events of such consequence as these have completely baffled all calculations, and given a deeper impression of uncertainty to the future; but as financial matters are mending, and the permitted import will be regulated by a sliding scale, which any material advance will entirely check, so we hope the worst has passed, and that growers will yet receive a fair remuneration for their produce. It has, indeed, been calculated that wheat in France cannot be produced under 42s. per qr.; and as the highest quotations at Paris are 45s. 9d. per qr., the French farmer—no longer shut up to his own country—is not likely to be in a hurry to clear out his stock, especially when in such admirable order for keeping. Indeed, a rise of 2s. 6d. to 4s. per qr. has already taken place in some departments; and at Bordeaux as much as 50s. 6d. per qr. has been demanded with firmness for the finest white wheat. Thus with a rise in France, and a heavy fall in Britain, prices are already approaching a level before transactions occur; and the markets in Holland, Switzerland, Piedmont, and Spain may present more attraction to commercial enterprise than England. Excepting the ports on the Danube, where fair samples of new wheat can be had at 30s. per qr., scarcely any other country than France shows a margin on wheat prices for profitable shipment to the ports of the United Kingdom—the rally on the New York market, with inconsiderable arrivals and monetary difficulties, all combining to restrict shipments thence; and though foreign supplies generally have increased of late, the approach of winter, as well as the state of trade, seems likely to reduce them.

The decline in prices already seems to have produced smaller native supplies, the last fortnight's sales showing a decrease, as compared with 1856, of 35,793 qrs. Millers, therefore, are likely to be so much less in stock, and so much more dependent on the market; but the fear of a competition with French flour, the best of which excels town-made, will keep them on the reserve. To show the value of wheat in foreign markets, we exhibit the following quotations: In Rotterdam, white 60lbs. per bushel wheat was quoted 54s.; at Antwerp, the best new white was 49s. to 50s.; fine red there and at Louvain, 62 to 64lbs. per bush., 46s. to 48s. per qr.; Stettin fine red was 41s. 6d.; rates at Dantzic were 38s. to 50s. per qr.; red at Petersburg 45s. 6d. per qr., new Ghirka at Odessa being the same price; at Taganrog it was 1s. per qr. less; Berdianski quoted 43s. for similar quality; Galatz and Ibrail show low prices, viz., 22s. to 30s. 9d., but the freight was 13s. to 14s. per qr. without other expenses; at New York, Chicago spring red was 33s. 8d., red Southern 45s., and white to 52s. 2d., with a freight of about 5s. 6d. per qr., and insurance, duty, &c., about 2s. 6d. per qr. more—equal to 60s. 2d. per qr. here; Philadelphia quotations for red were 41s. 6d. per qr., white to 46s. 6d. per qr.

Information being now gathered as correctly as possible respecting the crops, it appears that the reports furnished from the several English counties show only four unfavourable and forty average reports, against ninety-eight describing an excess in wheat. In barley there were only nine reports of excess, against seventy-three average statements and fifty unfavourable ones. Oats were still more deficient, there being sixty-nine describing a short produce, forty-five an average one, and only six an over-production. Wales, as respects wheat, shows thirteen reports of excess, and thirteen average accounts. In oats there are four reports of excess, with eleven for an average, and nine short. Barley was the worst crop, there being only twelve reports of an average crop, and thirteen deficient. Beans and peas throughout were defective, showing together three reports in excess, forty-four in deficiency with fifty-three describing an average yield The only counties which have materially suffered in wheat are Northumberland, Durham, and Yorkshire, where, with but an average crop, their harvest was greatly injured by rain; while the five eastern counties were the most favoured, all reporting an excess with one exception, and that not below an average. All spring corn therefore being deficient, a free importation will be required; and though wheat is plentiful, our stocks were so low at harvest time, and the ravages of disease amongst potatoes has so diminished the stock of human food, that the country ought to be able on this score, as well as for provision against future failures, to be able to bear an average importation of wheat without damage to the agricultural interest.

The first Monday in Mark Lane commenced on the back of good supplies of wheat, but Essex and Kent sent but a small show of samples for the morning's sale. Humid weather having prevailed, and money being scarce, sales were but slow, both in English and foreign samples, at the rates of the previous week; and in this state the London trade remained to the week's close. Manchester, Leeds, Birmingham, &c., remained unaltered. Newcastle, Hull, Wakefield, and Lynn were 1s. higher; Spalding and Boston being improved 1s. to 2s.; but Gainsborough and Bristol equally declined. Liverpool maintained the value of fine wheat, but inferior sorts yielded 4d. to 5d. per 70 lbs. in the course of the week.

The second Monday was moderately supplied generally, the near counties again making but a small contribution. Well-conditioned samples, both of home growth and foreign, sold rather better at fully the former value; but Russian sorts, which were abundant, being in some instances forced off, were sold on lower terms. On the following Wednesday the submarine telegraph brought the news of the permitted importation from France, which was very differently understood, from an omission in the *Moniteur*; but trade was quite taken aback, and operations reduced to a state of suspense through the remainder of the week, no sales being possible excepting at greatly reduced rates. The earlier country markets were mostly unchanged, or 1s. to 2s. down, and those later were not equally affected with London, the extreme reduction noted at Peterborough being only 2s. to 3s. per qr. Liverpool on Tuesday was 2d. to 3d. per 70 lb. cheaper, and on Friday there was no further depression on fine samples, though inferior were again reduced 2d. per 70 lbs.

The third Monday exhibited the full effect of the French news: the accumulation of the previous week, with a good supply for the morning from Essex and Kent, presenting an abundance of samples, which were long in vain offered at a reduction of 4s. per qr., and some sales were made at a greater sacrifice, the bulk being mostly left on hand. Wednesday, however, did not prove in millers' favour, the panic appearing to subside, and samples gradually went off through the week at the prices demanded on Monday. Almost all the country markets yielded, but not so extensively as the metropolis; a few only quoted rather lower rates. Newcastle was 1s. to 2s. cheaper, Wolverhampton, Newark, Bristol, Birmingham, and Boston were all 2s. to 3s. down, and the decline at Gloucester equalled that of London. Liverpool also appeared under an equal panic, Tuesday's decline being 4d. to 6d. per 70 lbs., and Friday's 3d. to 4d. more, making the extreme reduction in one week 7d. to 10d. per 70 lbs., or 4s. 3d. to 6s. per qr.

The fourth Monday, with moderate supplies from Kent and Essex and average foreign arrivals, showed a quiet state of trade without any pressure, but the demand was but languid. Liverpool on Tuesday showed a little reaction, the decline of the previous Friday being recovered, with fair sales for fine quality; the remainder of the week showed more firmness generally, Hull, Spalding, and Birmingham being 2s. per qr. dearer.

The supplies in the port of London during four weeks were as follows: In English they were 21,235 qrs., of foreign 70,450 qrs., showing a decline in the former as compared with Oct., of 9,296 qrs.; but an increase of the latter of 3,547 qrs., making the average per week about 1,000 qrs. less. The total exports in four weeks have been 1,944 qrs. wheat, 1,178 sacks flour, 412 qrs. oats, and 24 qrs. barley.

The flour trade, like that of wheat, maintained its position for the first fortnight, and as the effect of an expected French importation yielded on the third Monday 3s. per sack on town-made sorts, the price then being reduced to 47s., after long being held at 50s. Norfolks, which mostly rise and fall with wheat, were then lowered 2s. per sack, and on the fourth Monday further receded 1s. per sack, closing at 34s. per sack. The Paris flour market instantly rose 3f. to 4f. per sack of 157 kilos, equal to about 2s. to 2s. 6d. per sack English; but finding the London market seriously reduced subsequently, the rates at Paris have again become rather easier, with but a slow trade. The best marks were only 35s. per English sack; so there is a fair margin, with a moderate duty and ready transit for business; but offers on this market are made comparatively high, and some little time must elapse before there is a free importation and serious competition with the town trade; the generally excellent quality, however, of the article will ensure a sale. At New York, Canadian and Southern flour was quoted 23s. 8d. to 26s. 9d. per brl., equal to 33s. 9d. to 38s. 3d. per 280 lbs., and extra fancy 34s. per brl., equal to 48s. 7d. per 280 lbs.; the finest qualities of American, therefore, exceed our own prices, and the medium descriptions cannot compete with fine French.

The four weeks' supply has been—from the country 67,984 sacks; in foreign 10,596 brls. 3,765 sacks, which about equals the arrivals in October.

Barley, during the month, though not likely to be imported in quantities from France, has been more depressed than wheat, the falling off in the foreign demand for spirits having very materially reduced the value of sorts fitted for that use, permission to distil from grain being one of the benefits recently conferred on agriculture in France by the Government. From 4s. to 6s. per qr. is about the amount of reduction sustained on this grain; the first three successive Mondays severally noting a fall of 2s. per qr. on the secondary descriptions; while the inquiry for the best malting has been so unusually limited, that the reduction on the primest samples has been 3s. to 4s. per qr. The low sorts of foreign grinding, which for some time have been exhibited in quantities at easy rates, have only yielded moderately in price, and the demand for pig food will keep the consumption large, as they are relatively cheap with beans and peas. The four weeks' supply from abroad have been 30,468 qrs., and in English qualities 14,758 qrs.—the English supplies being rather over and the foreign rather under the previous month. The best Saale barley at Hambro', 51 lbs. per bushel, was last quoted 33s. 6d.

The dulness in the sale of malt has brought down prices 6s. per qr.—the first three Mondays regularly noting a decline in the value of 2s. per qr.; and though the last Monday was dull, no lower prices were accepted.

The oat trade has had to contend against extraordinary foreign supplies, chiefly Russian, and for every Monday, excepting the fourth, a decline of about 1s. per qr. took place; but, as a consequence of a falling off, by the fourth Monday there was some reaction, and 6d. to 1s. per qr. improvement was occasionally realized in retail; but the trade were then so well in stock, that they preferred realizing to making further purchases at an advance. Arrivals on the approach of winter must diminish; but the stocks in granary will for some little time be sufficient to feed the market, and moderate shipments may be looked for from Ireland; but the losses lately sustained by importers must limit arrivals, and we should not be surprised to see a further rise in value. The supplies in four weeks were 1,796 qrs. English, 2,040 qrs. Scotch, 18,605 qrs. from Ireland, and 168,724 qrs. foreign—showing a weekly average of 47,791 qrs., which exceeds the previous month by 10,000 qrs. weekly.

Beans through the month have been a heavy sale, and have declined in value fully 1s. per qr. Egyptian cargoes may now be expected, and higher rates cannot well be calculated on, though the yield is short, as some old English of the former crop remain. The imports have been into London 2,643 qrs. home grown, and 8,378 qrs. foreign—giving a weekly average of about 400 qrs. beyond the last month.

Hog peas not arriving in plenty, have very little changed in value; but a decline of 1s. to 2s. per qr. has obtained. White boilers arriving in large bulk from the Baltic at an unusually mild season, have sent this sort down 5s. to 7s. per qr. without creating a demand. They may, however, recover on the appearance of cold weather, the crop being defective. The supplies in four weeks were, for all kinds of English, 2,643 qrs.; foreign, nearly all white, 8,378 qrs.—the weekly average being 2,755 qrs. against only 1,044 qrs. in October.

Linseed has been greatly reduced in value by the monetary pressure—having declined every Monday at the rate of fully 2s. per qr.; but cakes, being in active inquiry and in small compass, have kept up their price. Oils have been reduced.

The seed trade has been wholly inactive, and the quotations made can scarcely be considered as beyond nominal. Though prices of cloverseed have fallen in France and Belgium, dealers remain on the reserve. Canaryseed has only been kept up by the extremely limited supply; but it has yielded about 5s. per qr. from the price of October, the best being only held at about 95s. Mustardseed has entirely lost favour, and sunk materially in value without buyers. Rapeseed has rather declined. Hempseed and the sorts used in confectionary find retail custom at about former rates.

CURRENCY PER IMPERIAL MEASURE.

Shillings per Quarter

WHEAT, Essex and Kent, white			new	43	to 54
Ditto, red			,,	42	49
Norfolk, Linc. and Yorks., red			,,	42	49
BARLEY, malting	32	to 35	Chevalier, new	36	40
Distilling	30	33	Grinding	23	28
MALT, Essex, Norfolk, and Suffolk	61	67	extra	—	—
Kingston, Ware, and town made	61	67	,,	—	—
Brown	55	57		—	—
RYE	—	—		30	35
OATS, English, feed	20	23	Potato	25	30
Scotch, feed	20	24	Potato	25	31
Irish, feed, white	20	21	fine	22	29
Ditto, black	19	20	,,	—	23
BEANS, Mazagan	33	38	Ticks	35	37
Harrow	35	38	Pigeon	42	46
PEAS, white boilers	40	44	Maple .. 42 43 .. Grey	40	41
FLOUR, per sack of 280lbs., Town, Households		40s.	fine	44	47
Country	34	35	Households	38	39
Norfolk and Suffolk, ex-ship				33	34

FOREIGN GRAIN.

							Shillings per Quarter	
Wheat, Dantzic, mixed	52	—	high do.	—	—	extra	—	58
Konigsberg	46	54	,,	—	—		—	—
Rostock	54	—	fine	—	—		—	—
American, white	50	55	red	46	50		—	—
Pomera., Meckbg., & Uckermrk, red				46	48		—	—
Silesian, red	45	50				white	50	54
Danish and Holstein							42	47
Russian, hard	45	54				French	(none)	
St. Petersburg and Riga							46	54
Rhine and Belgium							—	54
Barley, grinding	23	28				Distilling	30	33
Oats, Dutch, brew, and Polands	20	28				Feed	20	24
Danish and Swedish, feed	19	23				Stralsund	21	23
Russian							20	22
Beans, Friesland and Holstein							36	38
Konigsberg	31	37				Egyptian	35	36
Peas, feeding	37	40				fine boilers	40	42
Indian Corn, white	36	37				yellow	36	37
Flour, per sack, French	43	—				Spanish	—	—
American, per barrel, sour	22	25				sweet	30	31

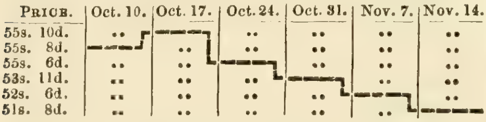
IMPERIAL AVERAGES.

For the last Six Weeks:	Wheat. s.	d.	Barley. s.	d.	Oats. s.	d.	Rye. s.	d.	Beans. s.	d.	Peas. s.	d.
Oct. 10, 1857	55	8	43	0	25	6	35	7	45	7	43	7
Oct. 17, 1857	55	10	43	0	25	6	35	4	45	6	44	5
Oct. 24, 1857	55	6	43	5	25	3	37	4	46	1	44	7
Oct. 31, 1857	53	11	43	1	25	0	36	10	45	9	45	3
Nov. 7, 1857	52	6	42	3	26	4	36	3	45	0	44	1
Nov. 14, 1857	51	8	41	3	25	3	34	7	44	9	43	11
Aggregate average	54	2	42	9	25	6	36	0	45	5	44	4
Sametimelastyear	65	5	45	4	26	5	40	9	46	4	44	5

COMPARATIVE AVERAGES—1857-56.

From last Friday's *Gaz.*		s.	d.	From *Gazette* of 1856.		s.	d.
Wheat	91,010 qrs.,	51	8	Wheat	109,848 qrs.,	64	4
Barley	81,571 ..	41	3	Barley	98,060 ..	46	7
Oats	13,455 ..	25	3	Oats	14,399 ..	26	2
Rye	133 ..	34	7	Rye	189 ..	41	7
Beans	4,911 ..	44	9	Beans	5,210 ..	47	3
Peas	1,912 ..	43	11	Peas	3,298 ..	43	2

FLUCTUATIONS IN THE AVERAGE PRICE OF WHEAT.



PRICES OF SEEDS.

BRITISH SEEDS.

Tares, new, per bushel..................5s. 0d. to 5s. 9d.
Mustardseed, per bush., new 17s. to —s., brown 13s. to 15s.
Coriander, per cwt............................ 20s. to 30s.
Canary, per qr............................ 80s. to 94s.
Linseed, per qr., sowing —s. to —s...crushing 63s. to 64s.
Linseed Cakes, per ton .... £10 0s. to £10 10s.
Rapeseed, per qr............................ 68s. to 70s.
Rape Cake, per ton.........................£5 0s. to £5 10s.

FOREIGN SEEDS. &c.

Tares, per bushel .... 0s. 0d. to 0s. 0d.
Hempseed, small, per qr. .... —s. to 44s...Do. Dutch 46s.
Coriander, per cwt............................ 15s. to 25s.
Carraway ,, ... 44s. to 46s.
Linseed, per qr., Baltic ..60s. to 61s...Bombay 60s. to 61s.
Linseed Cake, per ton...................£9 10s. to £10 0s.
Rapeseed, Dutch .... 76s. to 80s.
Rape Cake, per ton.........................£5 0s. to £5 10s.

HOP MARKET.

BOROUGH, Monday, Nov. 23.—The trade exhibits somewhat more activity, especially for the remaining choice growths of Mid and East Kent Hops, the prices for which continue to be fully maintained. There is also more inquiry for sound coloury Weald of Kents, and good yearlings are also in better demand. Hart & Wilson.

WORCESTER, (Saturday last.)—Very few hops at market, and prices fully maintained; inferior qualities, 56s. to 58s.; fine and choice, 65s. to 74s.

CHICORY.

LONDON, Saturday, Nov. 21.—We have to report a slow inquiry for both English and foreign Chicory. In prices, however, very little change has taken place. The supply in the market is but moderate.

ENGLISH, per ton	£13 0	to £13 10	HAMBURG	£0 0	to £ 0 0
HARLINGEN	13 0	13 10	BELGIUM	13 0	13 10
FLANDERS	12 0	13 0	GUERNSEY	13 0	0 0

COVENT GARDEN MARKET.

LONDON, Saturday, Nov. 21.—Supplies of most things are now greater than the demand, and prices are falling. Pears consist chiefly of Marie Louise, Glout Morceau, Duchesse d'Angouleme, Crassane, Jean de Witte, and Chaumontel. Large importations of foreign produce also continue to arrive. There is still a good supply of Filberts, which fetch from 30s. to 35s. per 100 lbs. Kent Cobs continue good; prices range nearly the same as last week. Barcelona Nuts fetch 22s. per bushel; and Brazils, 18s. do. The Orange season has now commenced in good earnest; they are likely to be abundant and good. Among Vegetables are still some excellent Cauliflowers, which realize from 2s. 6d. to 3s. 6d. per dozen. Cucumbers are plentiful. Spanish Onions may be had at from 1s. to 2s. 6d. per dozen. Potatoes are quite 10s. per ton lower than they were last week. Cut flowers consist of Orchids, Gardenias, Heliotropes, Geraniums, Violets, Mignonette, Heaths, Camellias, Chrysanthemums, and Roses.

FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Pineapples, perlb.	3	0to	4	6	Pears, per doz.	1	0to	4	0
Grapes, perlb.	1	6	3	0	Apples, per half sieve	1	0	2	6
Do., Portugal, per lb	1	0	2	0	Oranges, per 100	0	0	0	0
Lemons, per dozen	1	0	2	0	Melons	1	0	4	0
Do., per 100	5	0	10	0	Nectarines, per doz.	0	0	0	0
Peaches, per doz	3	0	6	0	Filberts per 100lbs.	30	0	35	0

VEGETABLES.

	s.	d.	s.	d.		s.	d.	s.	d.
Cabbages, per dozen	0	0to	0	0	Tomatoes, per half-sieve	0	0to	0	0
Cauliflowers per doz	1	0	3	0	Leeks, per bunch	0	2	0	3
Broccoli, per bundle	0	6	1	0	Artichokes, each	0	6	0	8
Greens, per doz. bunches	2	0	3	0	Shallots, per lb.	0	6	0	8
Brussel Sprouts, pr hf. s.	2	6	3	0	Garlic, per lb.	0	6	0	8
Seakale, per punnet	2	6	3	0	Lettuce, Cos., per score	1	6	2	0
Asparagus, per bundle	8	0	10	0	Endive, per score	1	0	1	6
Potatoes, per ton	80	0	140	0	Radishes, turnp, per doz.	1	0	2	0
Do. per bush.	2	0	2	9	Small Salad, per punnet	0	2	0	3
Do. per cwt.	4	0	6	0	Horseradish, per bundle.	1	6	4	0
Carrots, new per bunch	0	4	0	6	Mushrooms, per pottle	1	6	2	0
Turnips, per bunch	0	2	0	4	Parsley, per bunch	0	2	0	4
Spinach, per sieve	1	0	2	6	Basil, green, per bunch	0	6	0	8
Cucumbers, each	0	9	1	0	Marjoram, per bunch	0	2	0	4
Beet, per dozen	1	0	2	0	Savory, per bunch	0	2	0	4
Celery, per bundle	1	0	1	6	Mint, green, per bnnch	0	0	0	0

BREAD.

LONDON, Saturday, Nov. 21.—Prices of Wheaten Bread have declined this week in the metropolis.

Wheaten Bread, per 4lbs. Loaf	7½d.	to 8½d.
Household Do. ,,	6d.	7d.

PRICES OF BUTTER, CHEESE, HAMS, &c.

BUTTER, per cwt.:	s.	s.	CHEESE, per cwt.:	s.	s.
Friesland	116 to	124	Cheshire	66	76
Kiel	112	126	Cheddar	72	82
Dorset	116	126	Double Gloucester	58	64
Carlow	106	112	HAMS:		
Waterford	98	110	York	90	100
Cork,	94	110	Westmoreland	94	100
Limerick	94	106	Irish	90	96
Sligo	98	106	BACON: Wiltshire, dried	66	70
Fresh, per dozen	13s. 0d. to	15s. 0d.	Irish, green	60	66

OIL MARKET.

OILS.

	£	s.	d.	£	s.	d.
Olive, Florence, half-chests	£0	18	0 to	£0	0	0
Lucca	6	10	0	0	0	0
Gallipoli (252gals)	55	0	0	0	0	0
Spanish	53	0	0	0	0	0
Linseed (cwt.)	1	9	0	0	0	0
Rape, Pale	2	2	0	2	2	6
Brown	1	19	0	2	0	0
Cod (tun)	35	10	0	0	0	0
Seal, Pale	42	10	0	43	0	0
Do. Brown, Yel. &c	38	0	0	40	0	0
Sperm	70	0	0	72	0	0
Head Matter	80	0	0	0	0	0
Southern	42	0	0	43	0	0
Cocoa-nut (cwt.)	2	4	0	0	0	0
Palm	1	17	0	2	2	0

RESIN.

	£	s.	d.	£	s.	d.
Yellow (per cwt.)	£0	5	6	0	6	0
Transparent	0	5	6	0	6	0

PITCH.

	£	s.	d.	£	s.	d.
British (per cwt.)	£0	6	6	0	0	0
Archangel	0	0	0	0	0	0
Stockholm	0	10	0	0	0	0

TURPENTINE.

	£	s.	d.	£	s.	d.
Spirits (per cwt.)	£1	13	6	0	0	0
In Puncheons	1	12	6	0	0	0
Rough	0	9	0	0	9	6

TAR.

	£	s.	d.	£	s.	d.
American	£0	0	0	0	0	0
Archangel	0	0	0	0	16	0
Stockholm	0	14	6	0	0	0

WHALEBONE.

	£	s.	£	s.	d.
Greenland, full size (per ton).	£450	0	0	0	0
South Sea	450	0	500	0	0

HAY MARKETS.

Saturday, Nov. 21.—SMITHFIELD.—A fair average supply, and a sluggish demand.

CUMBERLAND.—Supply good, and trade rather dull.

WHITECHAPEL.—Trade dull, at barely stationary prices.

At per Load of 36 Trusses.

	Smithfield.		Cumberland.		Whitechapel	
MEADOW HAY	50s. to	80s.	48s. to	80s.	48s. to	80s.
CLOVER DITTO......	70s.	100s.	68s.	100s.	68s.	100s.
STRAW	25s.	30s.	24s.	30s.	24s.	29s.

LEADENHALL LEATHER MARKET.

LONDON, Saturday, Nov. 21.—Although the supplies of Leather have not increased, the trade generally has ruled heavy, and prices are barely supported.

CROP HIDES.

ENGLISH.

lbs.	lbs.		d.	d.
28 to	35	....	17 to	19
36	40	....	17	20
40	45	....	18	21
46	50	....	19	22
50	55	....	19	22
55	60	....	19	22

BUTTS.

ENGLISH.

lbs.	lbs.		d.	d.
14	16	....	23	27
17	20	....	23	27
21	24	....	23	27
25	28	....	25	23
29	32	....	25	28
33	36	....	25	28

FOREIGN.

lbs.	lbs.		d.	d.
14	16	....	22	25
17	20	....	22	25
21	24	....	22	25
25	28	....	23	25
29	32	....	24	26
33	36	....	24	26
36	45	....	—	—
45	50	....	—	—

OFFAL.

	d.	d.
English Shoulders	16	19
Do. Cheeks and Faces	10	12
Do. Bellies.............	10	12
Do. Middles...........	14	15
Foreign Shoulders........	15	17
Do. Necks.............	11	13
Do. Bellies	9	11
Do. Middles do.	13	14
Dressing Hide Shoulders.	13	16
D. do. Bellies...	10	11
Kip Shoulders.............	5	8
Do. Bellies	6	6½

DRESSING HIDES.

	lbs.	lbs.	d.	d.
Common......	20 to	24 ..	17 to	18
Do.	25	28 ..	17	18
Do.	30	34 ..	17	18
Do.	35	40 ..	17	18
Saddlers	30	35 ..	18	20
Do.	36	50 ..	19	21
Bulls			14	16
Shaved	14	16 ..	21	22
Do.	17	19 ..	20	22
Do.	20	23 ..	19	21
Do.	24	28 ..	18	20
Scotch do.	16	24 ..	19	22
Coach, per Hide.........			30s. to	36s.

HORSE BUTTS. Shaved.

	d.	d.	d.	d.
English	15½ to	16½..	17 to	18
Spanish	15	16½..	17	18

HORSE HIDES.

	lbs.	lbs.	d.	d.
English...........	13 to	18..	15 to	17
Do. without butts	9	14..	15	17
			s. d.	s. d.
Spanish salted, without butts, per hide.	6	9..	12 0	17 0
Do. do. do.	9	11..	14 0	18 0
Do. do. do. inferior..			8 0	11 0
Do. dry do.	6	8..	9 0	13 6
Do. do. do.	9	11..	11 0	15 0
Do. do. do. inferior..			7 6	10 0

CALF SKINS.

Av. weight.		Unrounded.		Rounded.	
lbs.	lbs.	d.	d.	d.	d.
20 to	28......	18 to	22	21 to	28
30	35......	18	23	21	28
35	40......	19	24	21	29
40	45......	20	24	22	30
45	50......	20	24	22	30
50	55......	19	24	21	29
55	60......	19	23	21	29
60	70......	19	23	21	28
70	80......	19	22	20	27
80	90......	18	21	20	26
90	100......	18	21	20	25
100	120......	17	20	19	23

KIPS.

	lbs.	lbs.	d.	d.
Petersburgh ..	4 to	7	21 to	25
Do. ..	7	9	21	25
Do. ..	9	10	20	24
Do. ..	11	13	19	22
E.Ind.drysltd.	5	7 ...	22	26
Do. do.	7	9 ...	21	24
Do. seconds............			18	21
Do. thirds..............			16	18
Do. inferior			12	15

SUNDRIES.

	s.	s.
Hog Skins, best ......each	14 to	21
Do. seconds... ,,	8	14
Seal Skins, split, per doz..	64	80
Do. for bindings ,,	40	84
Calf Skins, Sumach, tanned .... ,,	50	68
Do. white....... ,,	30	45
Horse Hides, white, each..	8	14
Sheep Skins—	d.	d.
Basils, unstrained, per lb.	9	16
Do. strained ,,	9	16
Do. facing, per doz....	6s.	18s
Tan, Sheep, & Lambs ,,	10	22
White Sheep, per 120 ...	80	120
Do. Lambs, ,, ..	40	120
Do. Sheep & Lambs, strained, per doz.	7	16
Sumach Roans, per doz.	20	38
Do. Skivers, ,,	10	16
Bark Skivers, ,,	9	16
Hide Splits, per lb.	10 to	12d

HIDE AND SKIN MARKETS.

LONDON, Saturday, Nov. 21.

MARKET HIDES.	s.	d.	s.	d.
56 to 64lbs......per lb.	0	4¼ to	0	0
64 to 72lbs.............	0	4¼	0	4½
72 to 80lbs.............	0	4½	0	4½
80 to 88lbs.............	0	4½	0	4¾
88 to 96lbs.............	0	4¾	0	5
96 to 104lbs............	0	5	0	0
104 to 112lbs...........	0	5	0	5¼

	s.	d.	s.	d.
HORSE HIDES, each	11	0 to	0	0
CALF SKINS, light.	3	0	5	0
Do. full	8	6	0	0
LAMBS................	0	0	0	0
Kents & half-breds ..	3	9	4	6
Downs	3	2	3	6
Polled Sheep	5	0	6	6

BIRMINGHAM, Saturday, Nov. 21.

Per lb.

HIDES.	s.	d.		s.	d.
95lbs. and upwards..	0	0	..	0	4⅜
85lbs. to 94lbs.	0	0	..	0	4½
75lbs. to 84lbs.	0	0	..	0	4¼
65lbs. to 74lbs.	0	3¾	..	0	3⅞
56lbs. to 64lbs.	0	3½	..	0	3⅜
55lbs. and under....	0	0	..	0	3¼
Cows	0	3⅛	..	0	3½
Flawed and irregular	0	3	..	0	3½
Horse each...........	0	0	..	0	0
Bulls..................	0	0	..	0	2½

Per lb.

CALF.	s.	d.		s.	d
17lbs. and upwards..	0	5⅛	..	0	0
12lbs. to 16lbs.......	0	6⅜	..	0	0
9lbs. to 11lbs.	0	6	..	0	0
Light	0	5¾	..	0	0
Flawed and irregular	0	4½	..	0	0
WOOL SKINS	2	9	..	5	1
PELTS	0	0	..	0	0
LAMBS	0	0	..	0	0

BARK, &c.

LONDON, Saturday, Nov. 21.

	£	s.	£	s.
English, per load of 45 cwt., del. in London	16	0 to	17	0
Coppice..................	16	0	18	10
Dutch, per ton	5	0	5	5
Hambro'..................	4	10	5	5
Antwerp Tree	5	0	6	10
Do. Coppice	5	10	7	0
French.................	0	0	0	0
Mimosa.................	7	0	8	0
Do. Ground	7	10	9	0

	£	s.	£	s.
Cork Tree, Barbary ...	7	0	7	10
Do. Leghorn	6	0	7	0
Valonia, Smyrna, p. ton	13	0	16	0
Do. Camata.........	14	0	16	0
Do. Morea	11	0	13	0
Terra Japonica Gambier...	17	0	17	5
Terra Japonica Cutch......	61	0	63	0
Divi Divi...............	10	0	11	10
Myrabolams	8	0	12	0
Sumach, Sicily, p. cwt.	0	13	0	15

WOOL MARKETS.

ENGLISH WOOL MARKET.

LONDON, Monday, Nov. 23.—We have not the slightest improvement to notice in the demand for any kind of English wool. Dealers, almost generally, refrain from operating, and prices are, therefore, almost nominal. The supply here, however, does not increase, and most of the growers are holding for an improvement in commercial matters.

Per pack of 240lbs.

Fleeces—Southdown Hogs..............	£19	10 to	£20	0
Do. Half bred Hogs	19	0	19	10
Do. Kent	19	0	20	0
Do. Southdown Ewes and Wethers	18	0	18	10
Do. Leicester do.	17	0	18	0
Sorts—Clothing, picklock	21	0	22	0
Do. Prime and picklock	18	0	19	0
Do. Choice........................	17	0	18	0
Do. Super.........................	16	0	17	0
Do. Combing—Wether matching ...	20	10	21	10
Do. Picklock	18	0	18	10
Do. Common	15	0	16	0
Do. Hog matching	23	0	24	0
Do. Picklock matching............	19	0	20	0
Do. Super do.	16	10	17	10

LEEDS WOOL MARKET, Nov. 20.—There has been rather more inquiry for wool during the present week, but the prices offered have been low, and the sales effected have been only to a small extent.

LIVERPOOL WOOL MARKET, Nov. 21.

Scotch.—There has not been much, if anything, doing in any kind of Scotch Wool this week; but if anything, prices are very irregular, and may be considered merely nominal.

	s.	d.	s.	d.
Laid Highland Wool, per 24lbs.	16	0 to	16	6
White Highland do..................	19	0	20	0
Laid Crossed do..unwashed	18	6	20	0
Do. do..washed........	19	6	21	0
Laid Cheviot do..unwashed......	20	0	22	0
Do. do..washed........	22	0	24	6
White Cheviot do..washed........	33	0	38	6

Foreign Wool.—Notwithstanding the extreme pressure on the money market, there is a demand from the manufacturers for immediate wants, which is met fairly by the holders, but at somewhat irregular prices, in some cases at a mere shade of reduction, and in others a little more.

FOREIGN WOOL MARKET.

Per lb. Duty Free.	s.	d.	s.	d.
German, Saxon, and Prussian. 1st and 2nd Elect	3	4 to	4	6
Prima	2	4	3	0
Secunda	2	0	2	4
Tertia	1	8	1	10
Australian & V.D. Land—Combg. & Clothg	1	5	3	1
Do. Lambs	1	2	2	6
Do. Locks and Pieces	0	10	2	2
Do. Grease	0	8½	1	10
Do. Skin and Slipe	1	1	2	2
S. Australian & S. River—Combg. & Clothg	1	6	2	6
Do. Lambs	1	4	1	9
Do. Locks and Pieces	0	10	1	3
Do. Grease	0	10	1	6
Do. Skin and Slipe...............	1	6½	1	9
Cape—Average Flocks..............	1	7½	2	3
Do. Combing and Clothing	1	1½	2	1½
Do. Lambs........................	1	4	2	6
Do. Locks and Pieces..............	1	4½	1	6½
Do. Grease........................	0	9½	1	5

TIMBER.

LONDON, SATURDAY, Nov. 21.—Since our last report, scarcely any transactions have taken place either in foreign or colonial Timber; and our quotations are wholly nominal.

Perload—	£	s.		£	s.
Quebec, red pine	3	5	to	4	10
Yel. Pine	3	10		4	0
Quebec Oak, White	6	0		6	5
,, Birch	4	0		4	15
,, Elm	4	10		5	10
Dantzic Oak	4	0		6	0
Memel Fir	3	10		4	5
Swedish	2	10		3	0
Masts, Qubc. Red Pine	6	0		6	10
Do. Yellow Pine	5	0		6	10
Lathwood, Dantzic fm	8	0		9	10
Do. Memel	10	0		11	0
Do. Quebec	5	0		5	5
DEALS, per C. 12 ft. by 3 by 9 in.:					
Quebec Wh. Spruce	9	0		11	5
Do. Red Pine	11	10		17	5
St. John Wh. Spruce	11	11		15	0

	£	s.		£	s.
DEALS, Yel. Pine, per reduced C.:					
Canada, 1st quality	15	10	to	16	10
Do. 2nd do.	11	0		11	10
Archangel Yellow	16	0		16	10
Memel	13	0		15	0
Gothenburg Yellow	13	0		14	0
Do. White	11	0		12	0
Gefle Yellow, 14 ft.	30	0		31	0
Christiania, per C. 12 ft. by 3 by 9 in.:					
Yellow	24	0		28	0
White	19	0		24	0
Deck Plank, Dantzic, per 40 ft. by 3 in.	1	0		1	10
Staves, per Standard M.:					
Quebec Pipe	75	0		0	0
Do. Puncheon	20	0		23	0
Baltic Crown Pipe	145	0		150	0

FLAX, HEMP, COIR, &c.

LONDON, SATURDAY, Nov. 21.—There has been very little business doing in Flax this week, but we have no actual change to notice in prices. Hemp moves off slowly, at £30 per ton for Petersburgh clean. Jute and Coir goods are inactive, at previous quotations.

MANURES.

PRICES CURRENT OF GUANO, &c.

	£	s.	d.		£	s.	d.
PERUVIAN GUANO, (per ton, for 30 tons) nominal	£13	5	0	to	£0	0	0
Do. Do. (under 30tons)	14	0	0		0	0	0
BOLIVIAN GUANO none	0	0	0		0	0	0

ARTIFICIAL MANURES, &c.

	£	s.	d.		£	s.	d.
Nitrate Soda (per ton)	£22	0	0	to	£23	0	0
Nitrate Potash or Saltpetre	29	0	0		30	0	0
Sulpht. Ammonia	21	0	0		22	0	0
Muriate ditto	27	0	0		28	0	0
Superphospht. of Lime	6	0	0		0	0	0
Soda Ash, or Alkali		0	0		10	0	0
Gypsum	2	0	0		2	10	0
Coprolite	3	15	0		4	0	0

	£	s.	d.		£	s.	d.
Sulph. of Copper or Roman Vitriol, for Wheat steeping	45	0	0	to	47	0	0
Salt	1	5	0		2	0	0
Bones, Dust, per qr.	1	5	0		1	6	0
Do. ½-inch	1	4	0		1	5	0
Oil Vitriol, concentrated, per lb.	0	0	1		0	0	0
Do. Brown	0	0	0¾		0	0	0

OIL-CAKES.

Linseed-cakes, per ton—	£	s.	d.	£	s.	d.
Thin American, in brls. or bags	£10	15	0	£11	10	0
Thick do. round	10	5	0	0	0	0

	£	s.	d.		£	s.	d.
Marseilles (none)	£0	0	0	to	£0	0	0
English	10	10	0		11	0	0
Rape-cakes, pr ton	6	5	0		6	10	0

JOHN KEEN, 35, Leadenhall-street,
(Late Odams, Pickford, and Keen.)

Williams & Co., 24, Mark Lane—Azotic.......£6 10 0

Manufactured by Hodgson & Simpson, Wakefield, and Matthews & Co., Driffield.

		£	s.	d.
Ammonia-Phosphate and Nitro-Phosphate	per ton	£8	0	0
Superphosphate of Lime	,,	7	0	0

Agricultural Chemical Works, Stowmarket, Suffolk.

		£	s.	d.
Prentice's Cereal Manure for Corn Crops	per ton	£8	10	0
Prentice's Turnip Manure	,,	7	0	0
Prentice's Superphosphate of Lime	,,	6	10	

Lancashire Manure Company, Widnes, near Warrington.

J. Knight & Co.'s Nitrogenized Bone Manures.......per ton £8 15 0

Manure Works, Grovehill, Beverley.

Tigar & Co.'s Celebrated Turnip Manures.......per ton £8 0 0

METALS.

LONDON, SATURDAY, Nov. 21.—Our market has been in a depressed state throughout the week, and prices generally have given way Scotch pig Iron has ruled heavy, at 53s. 3d. to 52s. 6d. cash. Spelter, on the spot, has declined to £27 10s. per ton. Tin Plates have given way to some extent; sales of IC Coke having been made at 28s. Tin is likewise lower; straits, 102s. 6d. to 105s. 6d. Lead and most other metals are drooping.

ENGLISH IRON.

	£	s.	d.
Bar and Bolt *a* per ton	£7	15	0
In Wales *a*	7	0	0
In Liverpool *a*	8	5	0
In Staffordshire *a*	9	10	0
*Sheets, single *a*	10	0	0
* Do. double *a*	10	10	0
*Hoop *a* £9 0 0—	9	10	0
*Nail rod, round *a*	8	5	0
Do. square *a*	9	0	0
Rails, Wales, *c* £6 5 0—	0	0	0
Do. Staffordshire *c*. £7 15—	0	0	0
Railway Chairs, Clyde	4	5	0
Pig, No. 1, Clyde *c*	2	12	0
3-5ths No. 1 & 2-5ths No. 3	3	12	0
No. 1, in Wales *b*	4	0	0
Scotch Pig, No. 1, in Lond.	4	0	0
Stirling's Non-laminating or Hardened Surface Rails £9—	9	2	0
Coal-blast, No. 1 Foun.	6	10	0
Charcoal bars	14	10	0
Stirling's Patent toughened Pigs, in Glasgow	3	10	6
Do. in Wales £4—	4	5	0

FOREIGN IRON *a*.

	£	s.	d.
Swedish £14 0 0—	14	15	0
Russian CCND	14	10	0
Ind. Ch. Pigs in London	6	0	0

FOREIGN STEEL *a*.

	£	s.	d.
Swedish keg, nom	21	10	0

ZINC.

	£	s.	d.
In sheets *d*	35	0	0

SPELTER *c*.

	£	s.	d.
On the spot £27 10 0—	0	0	0
To arrive	29	0	0

ENGLISH COPPER.

	£	s.	d.
Tile, 14 to 28lbs. *a*	117	0	0
Tough Cake *a*	121	10	0
Sheath and Bolts *a* per lb.	0	0	0
Sheet *a*	0	1	1½
Bottoms *a*	0	1	1
Yellow Metal *a*	0	0	1
Wetterstedt's Patent Metal† per cwt.	2	2	0

ENGLISH LEAD *a*.

	£	s.	d.
Pig, per ton £22 10 0—	23	0	0
Sheet	23	10	0

FOREIGN LEAD *a*.

	£	s.	d.
Spanish in bond, p. ton	23	5	0

ENGLISH TIN *e*.

	£	s.	d.
Block, per ton	116	0	0
Bar	116	0	0

FOREIGN TIN *c*.

	£	s.	d.
Banca	110	0	0
Straits (uncert.)	105	6	0

TIN PLATES *b*.

	£	s.	d.
IC Charcoal, per box	1	14	0
IX do	1	18	0
IC Coke	1	8	0
IX do	1	14	0
Canada Plates per ton	14	10	0

QCKSILVER *f*. per lb 1s 11½d 2s. 0d

TERMS.—*a*, 2½ per cent. dis.; *b*, 3 ditto; *c*, nett; *d*, 1½ per cent. dis.; *e* ditto; *f*, 1½ ditto. Delivered in Liverpool, 10s. per ton less.

* Cold blast, f.o.b. in Wales.

† Discount for cash in fourteen days, 5 per cent.

SPIRITS.

LONDON, SATURDAY, Nov. 21.—There is very little inquiry for Rum, and prices have a downward tendency. Proof Leewards 2s. 2d. to 2s. 3d., East India 2s. per gallon. Brandy rules about stationary, but the demand for it is inactive. In Malt spirit very little is doing.

RUM.

	s.	d.		s.	d.
E. India, proof per gal.	2	0	to	0	0
Leewards, do.	2	2		2	3
,, 10 to 20 O.P.	2	6		3	0
,, 21 29 ,,	3	8		3	10
Demerara 30 34 ,,	4	0		4	2
,, 34 40 ,,	4	3		4	6

	s.	d.		s.	d.
Jamaica. 26 to 29 O.P.	4	4	to	0	0
,, 32 36 ,,	4	6		4	9
Better qualities 32 36 ,,	5	0		0	0
Superior Marks 36 40 ,,	5	4		0	0

BRANDY—COGNAC.

Vintage	Shipped by Martell.				Shipped by Hennessy.				Shipped by Otard.				Shipped by Viny. Proprietors' Company.			
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
1854	16	4	17	6	16	4	17	6	0	0	0	0	0	0	0	0
1855	15	6	16	0	15	6	16	0	0	0	0	0	0	0	0	0

Hhds. 2d. per gallon higher. Puncheons scarce.

	s.	d.		s.	d.
Other Shippers	6	6	to	12	6
HOLLANDS, Geneva fine, for duty	3	8		4	0
Other qualities, to arrive and on the quay	3	2		4	5
BRITISH GIN, for exportation, proof hhds	3	10		4	0

BRITISH SPIRITS.

	s.	d.	s.	d.
GIN, proof, cash	10	2	0	0

END OF VOLUME XLVII.

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